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THE ORGANIZATION OF A HOSPITAL LABORATORY

ARTHUR H. WELLS, M.D.

DULUTH, MINN.

Reduced salaries, raised census and higher collections have in many hospitals throughout the country created an optimism which has been reflected in a general trend toward an improvement of service. Boards of directors have come to rely on the medical staff for advice of a scientific nature. The time is most opportune for a general realization, especially by the older and more influential physicians, of the now developing possibilities. Many hospital laboratories may be anywhere from fifteen to twenty years behind without its staff fully appreciating this defect. It is hoped to set forth a conception of a modern, efficient, yet unpretentious laboratory for a hospital of moderate size, to serve as a measuring stick for institutions in a similar class.

As in other fields, the personnel of a laboratory is its principal limiting agent. It is conceivable, but unlikely, that a laboratory can be all that could be desired without the full time attention of a clinical pathologist. His reputation depends on what he produces in one institution. There are no outside business affairs or necessary social duties as are found in any part time arrangement. A moderate sized hospital will give him more work than he can possibly do to complete satisfaction. The increasing complexity of clinical pathology is such that the average physician cannot keep up with his own work and the advances in diagnostic aids offered by the laboratory. Consultation of the clinical pathologist on matters pertaining to the application and interpretation of laboratory tests is always available. His efforts will lend additional scientific life and character to the hospital and aid in making it the medical educational center of the community.

Technical assistants, properly selected and in sufficient numbers, are indispensable for the achievement of a smoothly functioning and continuously improving laboratory. Specialization of the technicians in various fields of their work is productive of a greater selection of laboratory tests and a more dependable accuracy. The responsibility for the development and functioning of a department of the laboratory will bring out the best in an ambitious technician.

There is a limit to the amount of practical apparatus necessary in a laboratory. Consolation may also be had in the fact that the more expensive pieces have a long and useful life. Frequently a single instrument will be the key to a large field of diagnostic aids.

A flat rate laboratory fee which includes all but a few of the more expensive tests is of the greatest importance. No patient should be deprived of the benefits of any laboratory aid. Once the physician realizes that there will be no additional financial burden for his patient, he will feel free to order desirable tests. Rarely is the laboratory imposed on. Routine complete blood count, urinalysis, and tests for syphilis run on all hospital admissions will justify the flat rate fee in any case.

Lack of training, ability or apparatus should be no excuse for not rendering dependable reports as desired on tests of a proved diagnostic value. This is the laboratory's first function. However, the mark of distinction of a laboratory is its accomplishments in the field of research. An efficient "routine" laboratory would fall far short of the ideal.

In the following description of a laboratory, the development of each reorganized department is revealed through a summary of the reports that have been presented to its medical staff.

DEPARTMENT OF PATHOLOGY

Necropsies.—A constant effort is being made to prove the value of necropsies to physicians and interns in the hope of further developing the benefits derived from this most important branch of scientific medicine. One measure of the success of these efforts is the present average of over 80 per cent necropsies on hospital deaths. Attending physicians are being consulted as to the convenient time for performing necropsies, or, if they cannot be present, they may point out peculiarities of the case. The percentage of permissions for necropsies granted interns and their attendance at the examinations are being posted in the morgue. Nurses are encouraged to be present. A routine discussion of the history, physical examination, progress and therapy of the deceased precede each necropsy, and there is a constant correlation of clinical and pathologic aspects of the case during the examination. With the necessary additions to a morgue, careful bacteriologic studies can be made without waste of time or effort. Biochemical and biologic tests can be run where indicated. Special preparation and staining of tissues is important. The stains thus far developed in this laboratory are phosphotungstic acid, hematoxylin and eosin, Mallory's eosin methylene blue, Brown-Breen's (Gram's), acid fast, thionine, sudan III, Best's glucose, cresyl violet, osmic acid, iron, Levaditi's spirochete and Foot's silver stains. There is on hand a sufficient amount of glassware, crocks and chemicals, so that a minimum of time is required for preserving interesting specimens. Photographs and x-ray examinations are being made in all cases where indicated.

Necropsy reports include a gross and microscopic description and, when pertinent, a brief discussion and correlation of the clinical and pathologic observations. These reports are finished within two weeks unless haste is requested or indicated, and then they may be

From St. Luke's Hospital.

finished in three days. Records are sent to the attending and consulting physicians. One report is kept on the chart and another in the laboratory office. A cross index of these anatomic diagnoses is filed in the laboratory office to facilitate future investigation. Outpatient necropsies are being done without charge except for medicolegal cases. A comparison of necropsy and clinical diagnoses is being prepared and shown on a lantern slide at each monthly staff meeting. The combined errors of many physicians revealed in this way is the most effective argument for necropsies known. Another part of the mortality and morbidity report is the presentation of any outstanding case studied in the hospital during the previous month.

St. Luke's Hospital Laboratory Special Blood Report

Name:..... Date:.....
Case No.:..... Service:.....

1. RED BLOOD CELLS:
   a. Number per cmm. —
   b. Size in stained preparation —
   c. Shape in stained preparation —
   d. Color in stained preparation —
   e. Regeneration forms:
      (1) Nucleated red cells —
      (2) Basophilia: punctuate or diffuse —
      (3) Nuclear particles
      (4) Megaloblasts
   f. Fragility: hemolysis begins in % ; complete in % sodium chloride
      (control % %)
   g. Reticulocytes —
2. VOLUME OF PACKED RED BLOOD CELLS % of normal (cc. per 100 cc.)
3. VOLUME INDEX
4. HEMOGLOBIN % of normal Gm. per 100 cc. with H. H. hemoglobinometer
5. COLOR INDEX
6. SATURATION INDEX
7. WHITE BLOOD CELLS:
   a. Number per cmm. —
   b. Differential count:
      Neutrophils — % Eosinophils — % Basophils — %
      Lymphocytes — % Monocytes — %
      Nonfilamented neutrophils — % of 100 white cells (normal 6-16%)
      Nonfilamented neutrophils — % of 100 neutrophils (normal 15-23%)
      Basophilic (toxic) granulation —
   c. Presence of abnormal forms:
      (1) Myelocytes (3) Lymphoblasts
      (2) Myeloblasts (4) Fragile leukocytes
   d. Supravital staining
8. BILE PIGMENTS IN PLASMA:
   a. Icterus index (Normal 4 to 6)
   b. Units (Van den Bergh) per 100 cc. (Normal 0.5 to 2 units)
9. PLATELETS per cmm.
10. COAGULATION TIME
11. BLEEDING TIME
12. PROTHROMBIN TIME
13. CALCIUM TIME
14. CLOT RETRACTION
15. SEDIMENTATION TEST
16. BLOOD TYPE
17. MISCELLANEOUS
18. BONE MARROW DIFFERENTIAL COUNT (REVERSE SIDE)
19. LABORATORY DIAGNOSIS

Pathologist.....

Surgical Tissues. — Routine gross descriptions are being made on all tissues removed at operation, and microscopic descriptions of paraffin sections are being made on all tissues except such structures as old scars, hernial sacs, normal ribs and tonsils, unless they are requested. A diagnosis by frozen section will be attempted at any time. Paraffin section preparations can be had in five hours. Routine paraffin sections are reported on by the third postoperative day or earlier if desired. Special stains, biologic tests and bacteriologic studies are used when appropriate.

An honest description of each tissue is being made, its source being designated rather than it being diagnosed as "normal." Thus it is hoped to avoid any remote possibility of legal complications. For example: If an appendix has a horseshoe shape, more lymphocytes than usual in the mucosa, or an unusually thin wall, and yet shows no microscopic active inflammatory process, the variations will be described and the diagnosis "Appendix" will be made. With the surgeon's clinical diagnosis at the top of the report, prying eyes of those less informed will be satisfied.

A copy of the report is sent to the surgeon, one kept in the laboratory, and another put on the chart. The paraffin sections and blocks form permanent records. Unusually interesting specimens are saved for a museum. Others are being thrown out after a month until we have sufficient space and glassware to save all tissues.

DEPARTMENT OF HEMATOLOGY

A hematology department may be sadly neglected or it may follow closely the continuous advancements in the field. As a basis of our work in the study of blood, we have adopted a detailed report sheet patterned after that of Dr. Russell Haden of Cleveland (see "Special Blood Report" sheet). This is to be used for complete blood studies in cases with symptoms suggestive of blood dyscrasias.

In the interest of greater efficiency and economy in this department, the hospital has provided an excellent pipet shaking machine, Dr. Marble's differential blood counting machine, a Haden-Hausser hemoglobinometer and a binocular microscope.

Grams of hemoglobin per hundred cubic centimeters of blood is reported, as well as the usual percentage of normal. There is such a variation in the percentage of hemoglobin as determined by the several methods in common use that it would be well for physicians to become accustomed to the common basic figure expressed in grams. We are saving data on normal individuals living in this northern community and will arrive at a local relationship between grams of hemoglobin and percentage of normal.

All differential counts list neutrophils in two groups: nonsegmented and segmented. The differential blood counter makes this a simple procedure, which may become a distinct asset to some physicians. All differential counts are done on cover slip preparations so as to obtain a uniform distribution of the white blood cells.

The recently widely proved value of bone marrow studies leads me to believe that they will soon be used as a routine in certain types of cases. We have just recently proved that a patient with a normal white count was in an aleukemic phase of leukemia. Special bone marrow preparations are being made from all necropsies, and clinical studies are encouraged.

DEPARTMENT OF BACTERIOLOGY AND SEROLOGY

Bacteriology has possibly been neglected more than any other phase of laboratory work in hospitals of moderate size. With the cooperation of the hospital, we are now equipped to identify by approved methods almost any pathogenic organism.

Certain pieces of apparatus may need a brief description. Our Seitz microfilter makes it possible to isolate or work with bacteriophage, to prepare asthma and hay fever vaccines, and to study the field of filtrable viruses whenever the occasion arises. A potentiometer makes the preparation of mediums from raw materials a controlled process. It is an indispensable and efficient means for accurate hydrogen ion determinations in blood and other body fluids, and in certain experimental fields, especially bacteriology.

Instead of the laborious and occasionally failing method of perpetuating the many cultures used in a

modern bacteriologic laboratory by frequent subculturing, we are now using the recently discovered method of creating what might be called artificial spores of any organism. This is done by rapidly dehydrating them in a high vacuum with a special pump. The dried organisms can be kept sealed in a desk drawer for eight months or more. Preservation and concentration of antiserums or complement is made possible by this method. It also introduces a new field of bacteriology, as the cultures retain their virulence and original culture characteristics, enabling one to save many strains of various organisms for comparative group studies.

To give some idea of the variety of available tests and possibly some practical suggestions, a list of bacteriologic and immunologic tests will be cited. Recent improved methods for the culture diagnosis of gonorrhea have proved more accurate than the simple morphologic study of smears. A three-hour mouse method has proved quite reliable for pneumococcus typing, and we soon hope to identify all types for which there are antiserums on the market. The growth of Brucella abortus, Brucella melitensis, Brucella suis, Pasteurella tularensis, Neisseria gonorrhoeae, and certain strains of streptococci is enhanced greatly by an atmosphere of carbon dioxide. Carriers of the organisms of typhoid, epidemic meningitis and diphtheria may be located among the patient's contacts. The virulence of diphtheria-like bacilli can be tested. The determinations of total bacterial counts, tests for sewage pollution, and the identification of food poisoning organisms in water and food products may become imperative in any community. Methods for the demonstration of Rickettsia bodies, the virus of psittacosis, Leptospira icterohaemorrhagiae, Spirochaeta pallida, Bacillus anthracis, Clostridium botulinum, Haemophilus influenzae, the organisms of gas gangrene and certain pathogenic fungi are ready for use.

Certain serologic tests may prove of practical value. Controlled agglutination tests with antigens made of Eberthella typhi, Salmonella paratyphi, Brucella abortus, Brucella melitensis, Pasteurella tularensis, strains Shiga, Flexner and Hiss-y of Endamoeba dysenteriae and Bacillus proteus X19 will be reported after overnight incubation. Seven cases of infectious mononucleosis have been diagnosed or the diagnosis confirmed during the last two months by using the heterophile antibody test. Frei's antigen skin test made a clinical diagnosis of lymphogranuloma inguinale a certainty. A greater use of the bacteriocytophagic index and skin tests for brucellosis is encouraged. Autogenous vaccines can be prepared in from two to seven days.

We are running the Kahn and Kline tests on all cross-matched blood donors. These or other recognized tests should also be run in a routine way in all hospital admissions.

DEPARTMENT OF CHEMISTRY

The personal factor of error has recently been almost eliminated in two important pieces of apparatus used in chemistry. The photolometer electrically measures the intensity of light passing through the variously colored solutions previously compared in a colorimeter. A magnetic damper on any gravimetric balance will eliminate the time consuming and difficult calculation of the zero point.

The wide variety of chemical analyses being run in this laboratory include serum albumin, globulin and fibrinogen, blood calcium, phosphorus, iodine, bromide, chloride, methomoglobin, carbon dioxide capacity and hydrogen ion concentration. Spinal fluid proteins, dextrose and chlorides may be ordered. Liver function tests include blood cholesterol and cholesterol esters, bromsulfalein excretion, galactose tolerance, urobilinogen in the stool and urine, Van den Bergh's quantitative test and the icterus index. Kidney function tests include the Van Slyke urea clearance, phenolsulfonphthalein excretion, Mosenthal's and Volhard's specific gravity tests, urea excretion, quantitive urinary albumin, and the quantitative determination of various protein metabolites in the blood.

All emergency chemical tests are run when ordered, while routine requests are being run at 10 a. m. and 4 p. m. daily. Urinalyses are being run at 7 and 10 o'clock in the morning and 4 and 6 in the afternoon.

In toxicology we are prepared to run tests for the demonstration of the heavy metals, alkaloids, certain volatile oils and inorganic compounds. This part of the laboratory has been neglected even in many medical schools. However, a lack of training, ability or apparatus should not interfere with the isolation and identification of the more common poisons. We hope in the future to present to the staff a complete list of the poisons which we have proved our ability to identify.

TEACHING AND RESEARCH

I would like to call attention to a most important phase of laboratory work. Ideally, the pathologist should spend half of his time developing the many details of the experimental and teaching duties of his specialty. The various teaching aspects of necropsy work have already been dealt with. The continuous correlation of clinical and pathologic observations at necropsies, the permanent preservation of tissues of unusual interest, the preparation of a museum, and the frequent recording of pathologic processes by gross and microscopic photography and other methods need not be reiterated. For those interested, an opportunity to review their anatomy is being offered in the morgue in the form of group demonstrations. Staff members so requesting are notified a few hours in advance.

A clinical pathologic conference should be a part of the routine of every well organized laboratory. The benefits derived from these sessions depends greatly on the preparation of its individual participants. I might venture that no one thing has been more beneficial to the physicians of Duluth than the conferences conducted weekly during the last ten years by Drs. E. L. Tuohy and G. L. Berdez at St. Mary's Hospital. An abundance of instructive material is wasted as far as its immediate and very important application is concerned without this outlet.

It would seem that interns in many hospitals were once burdened by all the laboratory work. When the advantages of employing technicians became known, the pendulum swung, in many places, to the other extreme, so that a gesture at laboratory training became sufficient. Our intern committee has arranged for a minimum of training in this field, based on several important requisites. There should be a sufficient variety and quantity of laboratory procedures for which the intern should be given full responsibility. He should not be permitted to shift his work on a technician, and there should be no interference with the laboratory's efficiency or accuracy. We feel that this has been brought about by having two interns do all the tests ordered every third Sunday under the direct supervision of a technician and the pathologist. They also have certain laboratory duties involving those

patients on their individual services, besides performing the night laboratory tests. Their attendance and assistance at necropsies is important, and the supervised, complete performance of at least one examination is a minimum requirement. An intern's weekly conference provides further clinical and pathologic training.

A training school for laboratory technicians has been opened, which is planned to fulfil the requirements of the Council on Medical Education and Hospitals of the American Medical Association for acceptable schools for laboratory technicians. The number of students is strictly limited to one for each of the four teachers, and they rotate twice through the four departments during their fifteen months of training. The many assets to a laboratory offered by student technicians will not be entered on here.

The knowledge of fundamental gross and microscopic pathology in the more common disease processes would seem to be a minimum objective in the teaching of nurses. To this end, a twenty-hour lecture and demonstration course is being given by the pathologist. Nurses are being encouraged to attend necropsies, at which they are treated with special consideration. It is believed that as more people become familiar with the value and procedures of necropsies there will be less obstruction encountered in this field. Ignorance, mystery and bigotry thwart progress.

A comprehensive lecture on postmortem examinations was recently given before a regional meeting of the Society of Morticians. The pathologist may be used to some advantage before other lay groups talking on medical subjects.

All the current medical journals received for the hospital's general library pass over the pathologist's desk before entering the library. One duty of the pathologist is to know of the important developments in all fields of medicine, and especially those having to do with diagnostic procedures. To this end, a cross index of all such articles is being kept, and a diagnostic reference library is being developed in the laboratory office. The hospital has been quite liberal in permitting the pathologist to attend important medical meetings in other cities, which is an asset to any laboratory.

A spacious and well equipped animal house on the roof of the hospital makes animal work possible at any time. Interest in animal surgery or experimentation is welcomed. A variety of animals is being raised for this and other purposes. The hospital has offered the opportunity; there remains the necessity of time, ambition, imagination and interest on the part of the physician.

Assistance can be offered the pathologist by collaboration in experimental fields or by the editing of papers. It will suffice to list a few of the problems now being actively investigated in our laboratory: studies of bone marrow from all necropsies; comparison of retinal, cerebral, coronary and renal arteries from necropsies; development of a precipitation test for infectious mononucleosis; demonstration of the etiologic agent of infectious mononucleosis; investigation of the value of the Gordon test; performance of anaerobic cultures of the uterine cavity in cases of abortion; studies of endometrium in cases of metrorrhagia; development of a rapid, simple and practical office method of determining blood sugar; determination of the histogenesis of papillomatosis peritonei; routine studies of the hydrogen ion concentration of spinal fluid; comparison of liver function tests; the quantitative determination of silica in the lungs; special preparations for the study of the cytology of transudates and exudates; determination of the regional relationship of grams of hemoglobin and percentage of normal; the preservation of nonpathogenic, acid fast bacilli, organisms producing green pigment, bacilli of gangrene, and other bacteria for future group studies, and the preparation of several case studies.

SUMMARY

The actual development of a hospital laboratory has been described in the form of summarized reports to its medical staff. Sufficient indication of the variety of diagnostic aids offered by each department is given to define its limits of usefulness in a hospital of moderate size. Staff physicians are ultimately responsible for the development of their hospital laboratory. It would be well for them to appreciate fully its possibilities, especially during the present trend toward improvement of services in many hospitals throughout the country.

THE TAKATA-ARA TEST AND ITS RELATION TO CIRRHOSIS OF THE LIVER

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Clinicians everywhere are anxiously and hopefully awaiting a liver function test that will be of definite diagnostic value. The recent appearance of several American papers on a new test of liver function, the Takata-Ara test, in which it was concluded that a distinct differentiation, on the basis of this test, could be made between carcinoma and cirrhosis of the liver, stimulated the present investigation.

This reaction was originally described by Takata,[1] who used it to differentiate lobar pneumonia from bronchopneumonia. He found that when fluid from the chest of a patient with lobar pneumonia was added to a solution of sodium carbonate, mercury bichloride and acid fuchsin, a precipitate of mercury oxysol occurred. He believed that this precipitate was due to decreased stability of the serum proteins, produced essentially by an increase in the globulin fraction. Later Takata in collaboration with Ara [2] reported on the reaction in cerebrospinal fluid. It seemed to differentiate between syphilitic and meningitic involvement of the central nervous system. Daffinee and Grzebieniowska,[3] Cameron and McCulloch [4] and Monias [5] have all reported favorably on this spinal fluid test. Jezler [6] employed the test on the serum and ascitic fluid in liver disease, recognizing that a protein shift in the blood was not peculiar to lobar pneumonia. It was found to be positive in the serum and ascitic fluid in nearly all advanced cases

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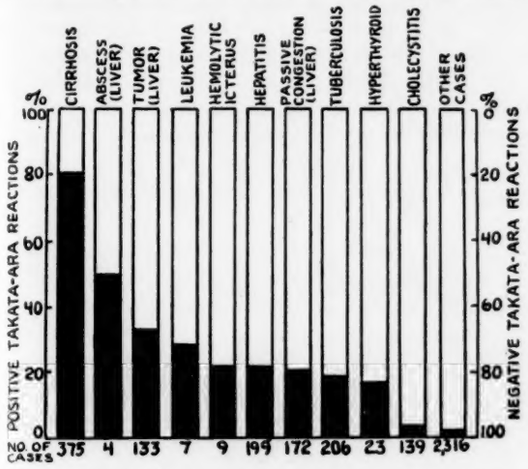
1. Takata, Maki: Ueber eine kolloidchemische Sero-Diagnostik der Lungenentzündung, Tr. 6th Congress Far Eastern A. Trop. Med. **1:** 693-699, 1925.
2. Takata, Maki, and Ara, Kiyoshi: Ueber eine neue kolloidchemische Liquorreaktion und ihre practischen Ergebnisse, Tr. 6th Congress Far Eastern A. Trop. Med. **1:** 667-671, 1925.
3. Daffinee, R. W., and Grzebieniowska, E. F.: The Takata-Ara Test on Spinal Fluid, New England J. Med. **205:** 1277 (Dec. 31) 1931.
4. Cameron, D. E., and McCulloch, R.: The Takata-Ara Test for Cerebrospinal Fluid, Canad. M. A. J. **23:** 557 (Oct.) 1930.
5. Monias, B. L.: The Clinical Value of the Spinal Fluid Test of Takata and Ara, J. Lab. & Clin. Med. **14:** 67-70 (Oct.) 1928.
6. Jezler, Adolph: Die Takatasche Kolloidreaktion in Serum und Körperflüssigkeiten und ihre Beziehungen zu Störungen des Eiweissstoffwechsels der Leber, Ztschr. f. klin. Med. **114:** 739-756, 1930.

of cirrhosis and usually negative in all other diseases, including cholelithiasis and carcinoma of the liver.

The literature contains numerous articles of a similar nature. The data from those of Oliva and Pescoroma,[7] Magath,[8] Ragins,[9] Neuweiler,[10] Schindel and Barth,[11] Lazzaro,[12] Skouge,[13] Crane,[14] Heath and King,[15] Hugonot and Sohier,[16] Oefelein,[17] and Hafström [18] have been tabulated and presented in the accompanying chart.



Positive and negative Takata-Ara reactions compiled from the literature.

METHOD

The method employed was that described by Jezler with modifications after Crane.[14] One cubic centimeter of a 0.9 per cent solution of sodium chloride was pipetted into each of six small test tubes (agglutination tubes are very satisfactory). One cubic centimeter of the patient's serum was added to the first tube. One cubic centimeter of the patient's serum and saline solution well mixed was pipetted into tube 2, and the procedure continued until dilutions from 1 : 2 to 1 : 64 were obtained. The final cubic centimeter was thrown away. To each tube 0.25 cc. of a 10 per cent solution of sodium carbonate was added, followed by 0.15 cc. of 0.5 per cent mercury bichloride. The tubes were then shaken and were read in five minutes and again in twenty-four hours. A pearly flocculent precipitate filling at least one fourth of any tube and a definite precipitate in any of the first four tubes is considered strongly positive. All other types of precipitate or lesser degrees of the pearly flocculent precipitate are considered negative. Heath's [15] division of readings into five groups seems only to make interpretation difficult. Serum preserved at icebox temperature for a few days seems suitable for testing, but serum many weeks old gradually loses its precipitating properties. Slight amounts of hemolysis do not seem to alter the test. A bluish cloudiness or a brick reddish precipitate may be disregarded, as these occur occasionally in the reagents when mixed without serum. The results of the test are outlined in the tables, to which reference will be made in the discussion.

RESULTS

In this series of 106 patients whose serums were tested, the clinical diagnosis was used as a basis for classification of the diseases and wherever possible was substantiated by postmortem examination or surgical biopsy. The cases are classified into twelve main groups (table 1).

In the twenty-one cases of clinical cirrhosis of the liver, diagnosis was based on a combination of several of the following: chronic alcoholism, hepatomegaly, splenomegaly, jaundice, ascites, hematemesis, esophageal varices, hyperchromic macrocytic anemia [19] or shrunken liver.

The twelfth class includes all patients in whom no definite evidence of liver damage was present. In this group were seven positive and thirty-two negative Takata-Ara reactions. Four of the former were chronic alcoholic cases but presented no clinical evidence of liver disease. The latter thirty-two included seven patients with nephritis, six of whom died in uremia, and two patients with multiple myeloma.

TABLE 1.—*Classification of Cases*

Clinical Diagnosis	Takata-Ara +	Takata-Ara −	No. of Postmortem Examinations	
Cirrhosis of liver	15		5	Diagnosis confirmed
		6	0	No deaths during observation period
Congestive heart failure	7		4	All with marked passive congestion of liver
		7	4	All with less marked passive congestion
Hepatitis	2		2	Marked central necrosis of liver
		3	2	Less marked central necrosis of liver
Cholecystitis with cholelithiasis		3	0	(Operative removal)
Liver malignancy (metastatic)	3		3	Diagnosis confirmed
		2	2	One with metastasis, one with normal liver (carcinoma of rectum)
Abscess of liver		1	0	No deaths
Congenital hemolytic jaundice	2		0	No deaths
		2	0	
Leukemia	1		1	Extensive leukemic infiltration of liver
		1	1	Moderate liver cell necrosis
Tuberculosis	2		2	Extensive miliary infiltration of liver
		2	1	Normal liver
Lobar pneumonia	1		1	Marked central necrosis of liver lobules
		4	1	Marked central necrosis of liver lobules
Hyperthyroidism		4	0	One was icteric (20); no deaths
Miscellaneous	6			
		32	7	Normal livers microscopically
Totals.....	39	67	36	

COMMENT

An attempt to correlate the Takata-Ara reaction with other liver function tests has been unsuccessful. Mann

7. Oliva, G., and Pescoroma, M.: The Takata-Ara Reaction in Hepatic Diseases, Minerva Med. **2:** 12 (July 7) 1933; abstr. Chem. Abstr. **27:** 4578, 1933.
8. Magath, T. B.: The Takata-Ara Test of Liver Function, Proc. Staff Meet., Mayo Clin. **10:** 493-496 (July 31) 1935.
9. Ragins, A. B.: The Value of the Takata and Ara Reaction as a Diagnostic and Prognostic Aid in Cirrhosis of the Liver, J. Lab. & Clin. Med. **20:** 902-913 (June) 1935.
10. Neuweiler, W.: Takatasche Reaktion und Schwangerschafttoxikose, Klin. Wchnschr. **40:** 1428-1429 (Oct. 6) 1934.
11. Schindel, L., and Barth, E.: Die Bedeutung der Takata-Reaktion für die Diagnose der Leberkrankungen in ihrem Verhältnis zur Galaktose und Bilirubin-Belastung, Klin. Wchnschr. **13:** 1332-1335 (Sept. 15), 1355-1359 (Sept. 22) 1934.
12. Lazzaro, G.: Takata-Ara Test in Serum and Ascitic Fluid of Diseases of the Liver, Policlinico (sez. med.) **41:** 144-152 (March 1) 1934; abstr. J. A. M. A. **102:** 1648 (May 12) 1934.
13. Skouge, E.: Der Wert der Takata-Ara Reaktion unter der Koagulationsbandbestimmung bei Leberkrankheiten, Klin. Wchnschr. **12:** 905-907 (June 10) 1933.
14. Crane, M. P.: A Modified Mercury Bichloride (Takata-Ara) Reaction in Cirrhosis and Neoplasms of the Liver, Am. J. M. Sc. **187:** 705-711 (May) 1934.
15. Heath, C., and King, E.: The Takata-Ara Test in the Diagnosis of Liver Disease, New England J. Med. **211:** 1077-1081 (Dec. 13) 1934.
16. Hugonot, G., and Sohier, R.: The Takata-Ara Reaction, Its Application as a Test of Liver Insufficiency, Rev. méd.-chir. d. mal du foie **9:** 5-38 (Jan.-Feb.) 1934; abstr. J. A. M. A. **102:** 2150 (June 23) 1934.
17. Oefelein, F.: Wirkungsmechanismus der Reaktion nach Takata-Ara und ihre praktische Bedeutung als Leber-Funktions-prüfung, Klin. Wchnschr. **14:** 56-58 (Jan. 12) 1935.
18. Hafström, Torsten: Takatas modifizierte Sublimatfuchsinreaktion am Blutserum als Diagnostikum bei Leberkrankheiten, Acta med. Scandinav. supp. 62, 1935, pp. 1-160.
19. Van Duyn, John: Macrocytic Anemia in Disease of the Liver, Arch. Int. Med. **52:** 839-851 (Dec.) 1933.

and his co-workers [20] have shown that the functions of the liver vary more or less independently of one another and that disturbance of one function may be coincident with normality in the other. Yegge [21] and Soffer [22] agree that no single test can be of much value. Several authors [23] find no relation between the sedimentation rate, the galactose tolerance, the bilirubin tests and the Takata-Ara reaction. Tannenholz [24] found no relation between the actual Wassermann reaction and the Takata-Ara reaction but did obtain 15 per cent of positive reactions in his cases of syphilis. Analysis of his positive results shows that seven patients were jaundiced, two were chronic alcoholic addicts and three were decompensated cardiac patients, conditions which have already been shown to give positive Takata-Ara reactions. Ragins attributes his positive reactions in hyperthyroidism to liver damage, which Youmans and Warfield [25] and Weller [26] find in 50 per cent and 54 per cent respectively of such cases, as evidenced in the former's series by retention of the bromsulfalein and in the latter's series by autopsy. We have not had that experience in our clinic. Correlation with the icteric index has been almost unanimously unsuccessful.

EXPLANATION

The rationale of the Takata-Ara test is not well understood. It has been stated by Takata [1] and Jezler [6] that it is the decreased stability of the serum proteins of the colloid system that makes the precipitation of the colloidal solution of mercuric oxide possible and that this is due to an increase of globulin with inversion of the albumin-globulin ratio. Hugonot and Sohier [16] found the Takata-Ara reaction to be positive in conditions usually brought about by severe hepatic disease, and also in protozoal infestations of the blood (kala-azar) in which a derangement of the blood proteins is found. They felt, however, that it was due to a diminution in the "protective" action of serum albumin. Oliva [7] reached similar conclusions. Schindel [27] found that, by adding various concentrations of lower fatty acids (propionic and the like) to a serum which otherwise gave a negative Takata-Ara reaction, he could produce a positive Takata-Ara reaction. This confirmed experiments of Kallós-Deffner [28] and seemed of considerable significance to Greene, Bercovitz and Hanssen.[29] Recently Ucko [30] has criticized Schindel's statements on the justifiable grounds that the addition of fatty acids so alters the reaction of the tubes as no longer to meet the requirement of the Takata-Ara reaction. Zirm [31] and others [32] are able to inhibit flocculation by the addition of small amounts of heparin to each tube, but no explanation is offered. Schindel [11] and others [33] were unable to confirm Jezler's demonstration of reversed albumin-globulin ratios in serums which gave a positive Takata-Ara reaction.

That there is a definite relationship between a positive Takata-Ara reaction and an increase in the globulin fraction is the opinion of Jezler,[6] Lazzaro [12] and myself.

Snell [34] writes that it has been observed repeatedly that there is a moderate reduction in the total serum proteins in advanced chronic hepatic lesions, the diminution occurring chiefly in the albumin fraction with reversal of the albumin-globulin ratio. In less advanced cases the albumin may be only moderately reduced and the globulin may be normal or increased in amount. Peters and Eisenman [35] state that the albumin reduction may be due to malnutrition.

TABLE 2.—*Percentages of Albumin and Globulin in Positive and Negative Takata-Ara Reactions*

Case No.	Patient	Albumin	Globulin	Diagnosis	Comment
				Positive Takata-Ara Reaction	
1	Ar	2.77	9.49	Multiple myeloma	
2	No	1.52	5.18	Biliary cirrhosis	Autopsy diagnosis
3	Ma	2.70	5.00	Carcinoma of lung	
4	We	3.26	4.42	?Portal cirrhosis	
5	Go	3.50	4.26	Miliary tuberculosis	Autopsy diagnosis
6	Cu	2.57	4.25	Portal cirrhosis	Autopsy diagnosis
7	Pe	2.64	4.10	Portal cirrhosis	Autopsy diagnosis
8	Be	2.76	3.96	Portal cirrhosis	
9	Ca	2.80	3.69	Portal cirrhosis	Pt. showed clinical improvement; repeat globulin was 3.08 and T.A.R. became negative
10	Bl	2.90	3.60	Portal cirrhosis	Autopsy diagnosis
11	Co	2.59	3.35	Portal cirrhosis	
12	Mc	3.67	3.29	Portal cirrhosis	
13	Ga	3.07	3.25	Cardiac failure	
14	De	3.56	3.17	Portal cirrhosis	
15	My	2.89	3.17	Cardiac failure	Autopsy diagnosis
16	Ro	3.25	3.13	Portal cirrhosis	
17	Be	3.94	3.13	Cardiac failure	Autopsy diagnosis
18	Re	3.09	3.04	Cardiac failure	
19	Ma	2.44	3.00	Hepatitis	Autopsy diagnosis
20	Cl	3.37	2.16	Portal cirrhosis	Autopsy diagnosis
21	We	4.37	1.74	Portal cirrhosis	Autopsy diagnosis
22	Tr	2.46	1.67	Carcinomatosis visc.	
	Average	3.00	3.71		
				Negative Takata-Ara Reaction	
1	Wi	3.71	3.08	Portal cirrhosis	
2-33	...	3.91	2.18	No clinical evidence of liver damage	
Average for 33 negative cases.....				No globulin over 3.00	

In an attempt to arrive at some answer to these questions, total serum proteins and fractions were determined in fifty-seven instances on fifty-six patients in this series. Total proteins in this laboratory [35a] have a normal range from 6.8 per cent to 8.5 per cent. Wu [36] obtained an average globulin figure of 2.09 per cent. Peters and Eisenman,[35] using Howe's [37] method in twenty-seven determinations on thirteen normal males, obtained an average globulin of 1.89 per cent with a range of from 1.32 to 2.91 per cent. In females the average was somewhat higher—2.62 per cent with a range of from 2.02 to 3.22 per cent. On the basis of these normal figures the results in our cases were rather striking.

20. Mann, F. C., and Magath, T. B.: Studies on the Physiology of the Liver: Effect of Removal of Liver on the Blood Sugar Level, Arch. Int. Med. **30:** 73-84 (July) 1922.
21. Yegge, W. B.: Liver Function Tests, Ann. Int. Med. **8:** 907-919 (Feb.) 1935.
22. Soffer, L. J.: Present-Day Status of Liver Function Tests, Medicine **14:** 185-255 (May) 1935.
23. Schindel and Barth.[11] Ragins.[9] Heath and King.[15]
24. Tannenholz, H.: The Takata Serum Reaction as a Diagnostic and Prognostic Aid in Syphilology and Dermatology, Am. J. Syph. **17:** 352-381 (July) 1933.
25. Youmans, J. B., and Warfield, L. M.: Liver Injury in Thyrotoxicosis as Evidenced by Decreased Functional Efficiency, Arch. Int. Med. **37:** 1-17 (Jan.) 1926.
26. Weller, C. V.: Hepatic Pathology in Exophthalmic Goiter, Ann. Int. Med. **7:** 543-560 (Nov.) 1933.
27. Schindel, Leo: Zum Mechanismus der Reaktion nach Takata-Ara, Klin. Wchnschr. **13:** 221-223 (Feb. 10) 1934.
28. Kallós-Deffner: Takata-Ara Reaction in Normal Conditions and Hepatic Diseases: Studies on Rabbits, Ztschr. f. d. ges. exper. Med. **92:** 394-396, 1933.
29. Greene, C. H.; Bercovitz, Zacharias, and Hanssen, E. C.: Liver and Biliary Tract: A Review, Arch. Int. Med. **55:** 681-706 (April) 1935.
30. Ucko, H.: Zum Mechanismus der Reaktion nach Takata-Ara, Klin. Wchnschr. **13:** 468-469 (March 30) 1935.
31. Zirm, Konrad: Ueber die Beeinflussung der Takata-Ara Reaktion durch Heparin, Klin. Wchnschr. **12:** 1695-1696 (Oct. 28) 1933.
32. Ragins.[9] Medvei, C. V., and Paschkis, K. E.: Die Beeinflüssung der Takata Ara Reaktion und des Koagulationsbandes durch Heparin, Klin. Wchnschr. **12:** 1910 (Dec. 9) 1933.
33. Skouge.[13] Magath.[8] Ragins.[9]
34. Snell, A. M.: Changes in the Proteins of Blood in Hepatic Disease, Proc. Staff. Meet., Mayo Clin. **31:** 489-492 (July 31) 1935.
35. Peters, J. P., and Eisenman, A.: The Serum Proteins in Diseases Not Primarily Affecting the Cardiovascular System or Kidneys, Am. J. M. Sc. **186:** 808-833 (Dec.) 1933.
35a. Bruckman, F. S.; D'Esopol, M., and Peters, J. P.: The Plasma Proteins in Relation to Blood Hydration, J. Clin. Investigation **8:** 577 (June) 1930.
36. Wu, Hsien: A New Colorimetric Method for the Determination of Plasma Proteins, J. Biol. Chem. **51:** 33-39 (March) 1922.
37. Howe, P. E.: The Use of Sodium Sulfate as the Globulin Precipitant in the Determination of Proteins in the Blood, J. Biol. Chem. **49:** 93 (Nov.) 1921.

Serums with reversed albumin-globulin ratios were investigated. There were eighteen such cases, thirteen of which gave a positive Takata-Ara reaction, a correlation closer than Schindel and Barth [11] obtained (eight positives out of twenty-one serums with reversed albumin-globulin ratio), but not very definite. Mere reversal did not seem to be the important factor and absolute increases in globulin with 3 per cent as the upper limit of normal were tabulated. There were twenty-one such cases, of which nineteen gave positive Takata-Ara reactions (table 2). There were three cases of positive Takata-Ara reactions with globulin below 3 per cent for which no explanation can be offered. The total serum globulin was then calculated from the percentage figures given by Schindel, and it was found that seventeen of his twenty-one positive Takata-Ara reactions were associated with globulins higher than 3 per cent.

Rowe [38] has found reports of globulin averages from 3 to 3.5 per cent in nephritis, pneumonia, angina pectoris, tetanus and diabetes. Bruckman, D'Esopo and Peters [39] report a case of gumma presenting a globulin of 6.13 per cent. Wu [36] finds globulins ranging from 3.35 to 7.06 per cent in kala-azar, and Hugonot obtains positive Takata-Ara reactions in his own cases of kala-azar. Meleney [40] reports globulin averages of 5.34 per cent in fourteen cases of Schistosomiasis japonica. In our sixteen cases of cirrhosis of the liver the average globulin was 3.4 per cent, while the average albumin was 3.17 per cent. In the thirty-three negative cases these figures were 2.18 per cent for globulin and 3.91 per cent for albumin (table 2).

It seems reasonable to suppose that increased globulin will give a positive Takata-Ara reaction in most instances, which, as has been shown, may occur in a variety of clinical syndromes.

SUMMARY

Reports of Takata-Ara reactions in 3,583 patients have been collected from the literature. The test was positive in 315 out of 375 cases of cirrhosis of the liver. It was negative in 2,254 out of 2,316 cases presenting no known liver involvement. Serum protein determinations and the Takata-Ara reactions were carried out simultaneously on fifty-six patients in our own series. Nineteen of our twenty patients with serum globulin of over 3 per cent gave positive Takata-Ara reactions. Only three of our thirty-six patients with globulins of less than 3 per cent gave positive Takata-Ara reactions.

The average figures for albumin of 3.91 per cent and for globulin of 2.18 per cent found in our thirty-three negative patients compares favorably with the normal figures reported in the literature. The sixteen patients with cirrhosis of the liver had an average albumin figure of 3.17 per cent and an average globulin of 3.4 per cent.

CONCLUSIONS

The Takata-Ara reaction is not diagnostic of cirrhosis of the liver.

The Takata-Ara reaction is likely to be positive in any disease within which the globulin level is elevated.

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38. Rowe, A. H.: The Albumin and Globulin Content of Human Blood Serum, Arch. Int. Med. **18**: 455-473 (Oct.) 1916.
39. Bruckman, F. S.; D'Esopo, L. M., and Peters, J. P.: The Plasma Proteins in Relation to Blood Hydration, J. Clin. Investigation **8**: 577-590 (June) 1930.
40. Meleney, J., and Wu, Hsien: Serum Proteins in Schistosomiasis Japonica, China M. J. **38**: 357-361 (May) 1924.

THE CLINICAL DIAGNOSIS OF AMEBIC DYSENTERY

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In few diseases is the importance of specific diagnosis better illustrated than in amebic dysentery. If treated symptomatically, the illness tends to be protracted and to become progressively more distressing; if inaccurately diagnosed, therapeutic procedures hazardous to life are likely to be instituted. On the other hand, if accurately diagnosed, specific medication brings rapid relief and prompt recovery. The central problem of the effective handling of this disease is its recognition.

In the study of the Chicago outbreak the difficulties in the diagnosis of amebic dysentery frequently have been brought to our attention, commonly by impressive case records. We have ascertained that but one fifth of the active cases later reported had been identified accurately prior to the general knowledge of the occurrence of the epidemic. Concurrent and subsequent observations of endemically occurring infections also have revealed a substantial proportion of cases with long delayed diagnosis. We wish, therefore, to bring to the attention of practitioners that information which, in our opinion, serves best to facilitate the diagnosis of this condition.

As a basis for this report, we have clinical data on 1,215 cases. Our records, which vary in completeness, include reports submitted by attending physicians, questionnaires completed by patients or their representatives, and supplementary information elicited by correspondence and personal interviews. The complete analysis of these data has been presented elsewhere.[1]

THE OCCURRENCE OF AMEBIC DYSENTERY

Of considerable importance in the diagnosis of any disease is a knowledge of its distribution, geographic, seasonal and in varying population groups. For the United States, evidence relative to these distributions of amebic dysentery is incomplete, but the information is adequate for clinical purposes.

During the one major epidemic outbreak (Chicago, 1933), cases were recognized in all parts of the United States, but particularly among the well-to-do of the larger urban centers of the North, where the infection would be least expected. As a result of the wide interest thus engendered, endemic infections also have been widely recognized. Contrary to recent beliefs and teachings, it is now known that amebic dysentery is not limited in distribution by latitude, season or social standing.

It appears reasonable and safe to assume that variations in prevalence in different areas do occur. From a knowledge of source and modes of dissemination of amebic dysentery as compared with typhoid fever and bacillary dysentery, it is to be expected that the relative prevalence of the endemic Endamoeba histolytica infections will, in general, correspond. Where pollution with human excrement is known to occur, amebic

1. A full discussion of the clinical aspects of epidemic amebic dysentery as observed in the Chicago outbreak of 1933 is to be found in National Institute of Health Bulletin 166. This bulletin, entitled "Epidemic Amebic Dysentery, the Chicago Outbreak of 1933," can be obtained from the Superintendent of Documents, Washington, D. C., by forwarding 20 cents to that official.

dysentery as well as the other enteric infections is to be expected. Recently in the study of water-borne epidemics of typhoid fever and acute enteritis, careful observation brought to light a few cases of amebic dysentery which probably otherwise would have gone undetected. Further observations in this line are to be desired. In such situations, judging by the Chicago outbreak, the symptoms of amebic dysentery usually will appear (in about two thirds of the cases) between the end of the first week and the end of the first month after exposure, but the incubation period may be even less than one week or, occasionally, as long as three months.

Amebic dysentery therefore must be considered in differential diagnosis at all times and in all places, but especially where the incidence of other enteric infections is high. Groups known to have been exposed to human fecal pollution should be followed with particular care for evidence of the occurrence of Endamoeba histolytica infection.

CLINICAL MANIFESTATION

Amebic dysentery is one of the large group of diarrheal diseases, the various members of which are strikingly lacking in prominent differential characteristics. The response to Endamoeba histolytica invasion may be so mild that notable symptoms are lacking, or there may be a minor gastro-intestinal disorder with or without diarrhea. The graver manifestations include evidences of an acute or chronic ulcerative process in the large bowel, varying both in extent and in the area chiefly involved. Occasionally this may be associated with extensive tissue destruction. There are also the various complications, which usually, but not always, are preceded by intestinal symptoms. It is this variability in characteristics which makes difficult the accurate diagnosis of this infection.

Early Inadequate or Erroneous Diagnoses in Endamoeba Histolytica Infection

Erroneous Diagnosis	In Fatal Cases	In Nonfatal Cases
Colitis: ulcerative (mucous and other nonspecific)	11	73
Dysentery: bacillary or type undetermined	5	16
Intestinal "flu"	4	10
Tuberculous enteritis	3	2
Diverticulitis	2	0
"Ptomaine poisoning" and "food poisoning"	1	2
Appendicitis or abscess, right lower quadrant	14	27
Cholecystitis or abscess, right upper quadrant	5	8
Intraperitoneal abscess	1	1
Cancer (rectum, intestine, stomach and liver)	17	1
Hemorrhoids, anal fissure and rectal polyps	1	18
Pleurisy and empyema	1	2
Typhoid fever and malaria	2	4
Total erroneous diagnoses reported	67	164
Total reported cases erroneously diagnosed	50	164

To American physicians generally, amebic dysentery has been presented as a grave chronic disease with gradual onset and an afebrile course marked by intermittent abdominal pain and the frequent passage of stools containing much bloody mucus. As an aid in accurate diagnosis, the common variations from this must be emphasized.

In 18 per cent of our cases the onset was abrupt, and in one third of all cases it was with symptoms other than diarrhea or abdominal pain. Fever and vomiting, with abdominal pain localized in the right lower quadrant, and accompanied by tenderness and rigidity, often served to limit attention to the appendix. It has been demonstrated that the amebic infection frequently first establishes itself in the cecum and may involve the appendix. Thus, differential diagnosis is particularly difficult but exceptionally important. Appendectomy in this disease proved a treacherous and hazardous procedure, death resulting in thirteen (41 per cent) of the thirty-two cases in which this treatment was reported. Rectal distress with blood in the stools has provided a clinical picture interpreted as hemorrhoids. Six of these cases were treated surgically, one with a fatal outcome. In the foregoing cases it was the nature of the onset, which lacked the characteristic diarrhea, that limited attention to other than the diarrheal disorders.

Likewise, certain features of the course of the disease have proved misleading. There were the illnesses which began insidiously and were characterized by weakness, persistent abdominal distress, and mild diarrhea with bloody mucus in the stools. On examination, a mass was detected in the cecum or the course of the colon, or found on rectal examination. (In amebic infection this appears to be due to edema.) For obvious reasons, such cases have been regarded as due to a malignant condition. In others, the elevation of temperature was confusing. Fever in some degree was found to be present in 70 per cent of the severer infections involving Chicago residents, and this condition was reported spontaneously in almost one third of all out-of-town cases. An elevated temperature therefore does not speak against the existence of amebic dysentery.

DIAGNOSTIC ERRORS

Early diagnoses which proved inadequate or erroneous have been reported in 214 cases, as shown in the table. These are the more significant since the patients concerned were ordinarily in comfortable economic circumstances and sought relief from physicians of recognized ability.

It is noted that the most common mistake was the acceptance of nonetiologic diagnoses such as colitis or "dysentery." In fatal cases, however, the condition was more commonly designated as one of a surgical nature. In order of frequency, these erroneous diagnoses were malignancy, appendicitis or appendiceal abscess, sepsis in or near the gallbladder, and in one case hemorrhoids. In one half of the fatal cases, mistaken diagnoses were reported, and in more than two thirds of these the illness had been handled as a surgical disease. As previously indicated, lack of specific diagnosis deprived the patients of effective therapy, but certain of the erroneous diagnoses subjected them to therapeutic procedures hazardous to life.

The influence of diagnosis on the prognosis has in other ways been apparent. In the total series of 1,409 cases observed in the study of the Chicago outbreak, there were ninety-eight (7 per cent) deaths. The highest fatality rate was in the nonhotel cases which had originated prior to the epidemic period and had progressed for months or years unrecognized. Likewise in the epidemic cases the severity of the course and the proportion of fatalities varied directly with the duration of illness prior to diagnosis. According to our reports, in no instance did a fatality follow early consultation, prompt diagnosis and adequate specific therapy. Thus, the prognosis was directly dependent on the promptness of diagnosis and the institution of specific therapy.

MAJOR DIAGNOSTIC CONSIDERATIONS

In arriving at a correct diagnosis of this disease, the following considerations appear to us of chief importance.

1. There should be a more consistent endeavor to arrive at an etiologic diagnosis of the diarrheal diseases.

This is of importance not only in the identification of amebic dysentery but also for Bacillus dysenteriae infections.

2. As an intestinal parasite, Endamoeba histolytica is widely disseminated in all parts of the United States. Though unknown as to prevalence, still clinical disease from this cause is now known to occur sporadically in all regions of this country. Amebic infection therefore must be more commonly considered in differential diagnosis.

3. Disease caused by this parasite varies widely in clinical manifestations, simulating among others "simple diarrhea," minor gastro-intestinal disorders and major surgical conditions. Hence the possibility of amebic infection must be weighed in the diagnosis of a wide variety of clinical disorders.

4. Confirmation of clinical diagnosis may rest on either the identification of the etiologic agent or the prompt response to specific therapy. Concerning the former, it is to be emphasized that undue weight must not be given to negative laboratory examinations. Even by experienced workers the organism cannot always be found in the discharges, and by the less experienced they may not be recognized. The more frequent use of a therapeutic test with one of the newer amebicides would, we believe, be of material aid in the more prompt and accurate identification of this disease.

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THE USE OF STANDARDIZED MOUSE BRAIN ANTIGEN

FOR THE PERFORMANCE OF THE FREI TEST FOR LYMPHOGRANULOMA INGUINALE

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The recent appearance of an article by Strauss and Howard [1] condemning the use of lymphogranulomatous mouse brain antigen for the routine performance of the Frei test has necessitated the publication of our results with the use of this material for a period of two years at the New York Hospital. Since May 1934, 595 tests have been made with mouse brain materials in an attempt to establish the efficacy of lymphogranulomatous mouse brain antigen for Frei testing. The tests included those performed with lymphogranulomatous mouse brain antigen, both our own (New York Hospital) and commercial, in patients infected with lymphogranuloma inguinale and control tests which were carried out with normal mouse brain antigen in the same subjects and with normal mouse brain and lymphogranulomatous mouse brain antigens in individuals who have never had the disease. In Strauss and Howard's paper the only results that are strictly comparable with ours are those which they obtained after observing three positive and eleven control tests with commercial antigen. Commercial and New York Hospital antigens are prepared and standardized by the same method, from the same strain of virus, and with the same strain of mice. The remainder of their paper deals with results obtained by the use of totally different mouse brain emulsions. Their conclusions as to the value of mouse brain Frei antigen of the type that is distributed commercially—an entirely new product—are therefore based on too slender experience to be of any significance.

Prior to the introduction of lymphogranulomatous mouse brain antigen the only material available for the performance of the Frei test was antigen made from human pus as first described by Frei.[2] Human pus antigen, however, is limited in supply and is an unsatisfactory material for several reasons; viz.:

1. Cases of suppurating buboes due to lymphogranuloma inguinale from which pus may be obtained are encountered relatively infrequently.

2. Only that pus can be used which is uncontaminated with other organisms. Secondary infection following sinus formation and the coexistence of other venereal diseases occur often enough to make suitable pus scarce.

3. When a suitable case presents itself, the pus is usually available only in small quantities.

4. Specimens of pus taken from different cases vary in antigen content.

Previously we [3] have shown that lymphogranulomatous mouse brain antigen has none of these disadvantages. Thus:

1. With a sufficiently virulent strain of the virus which is susceptible of being transmitted indefinitely through mice, the supply of antigen is unlimited and readily available.

2. By use of mice known to be free from spontaneous diseases and by careful laboratory technic, contamination with other organisms is unlikely.

3. By proper dilution and dosage, the exact details of which depend in the first place on the virulence of the virus and finally on the degree of reaction in known lymphogranuloma inguinale cases, a standardized product may be obtained the sensitivity and specificity of which are equal to that of human pus antigen.

It is our purpose in this paper to present evidence that standardized lymphogranulomatous mouse brain antigen is an excellent material for the routine performance of the Frei test.

METHODS AND MATERIALS

Antigens.—1. The Source of Lymphogranulomatous Mouse Brain Antigen: All the specimens of lymphogranulomatous mouse brain antigen employed in this work have been prepared from a single strain of virus which was isolated in April 1934 from the pus and glandular tissue of a Negro who had the inguinal type of the disease.[4] Each of the ninety-five of our antigens and the forty-one commercial antigens represented a single passage of the virus except in six instances in which brains from several passages were pooled to make a single antigen. There have been 111 passages to date.

2. Preparation and Standardization: It was seen that with successive transmission through the brains of mice the virus increased in virulence. It was also noted that with the same volume and concentration of inoculum the greater the virulence of the virus, the greater the antigen content of the infected brains. In order to obtain standardized lymphogranulomatous mouse brain antigen it first became necessary to obtain

From the New York Hospital and Department of Medicine, Cornell University Medical College.

1. Strauss, M. J., and Howard, M. E.: The Frei Test for Lymphogranuloma Inguinale: Experiences with Antigen Made from Mouse Brains, J. A. M. A. **106**: 517 (Feb. 15) 1936.

2. Frei, W.: Eine neue Hautreaktion bei Lymphogranuloma inguinale, Klin. Wchnschr. **4**: 2148 (Nov. 5) 1925.

3. Grace, A. W., and Suskind, Florence H.: Lymphogranuloma Inguinale: III. The Use of Lymphogranulomatous Mouse Brains for Diagnosis, Arch. Dermat. & Syph. **34**: 65 (July) 1936.

4. Grace, A. W., and Suskind, F. H.: Successive Transmission of the Virus of Lymphogranuloma Inguinale Through White Mice, Proc. Soc. Exper. Biol. & Med. **32**: 71 (Oct.) 1934; Lymphogranuloma Inguinale: II. The Cultivation of the Virus in Mice and Its Use in the Preparation of Frei Antigen, Arch. Dermat. & Syph. **33**: 853 (May) 1936.

brains of approximately the same antigen content. This was accomplished by adjusting the volume and concentration of inoculum to the virulence of the virus. The details of preparation and standardization of our lymphogranulomatous mouse brain antigen follow. The Frei antigens which are distributed commercially and which were used in this paper were made in approximately the same way.

Healthy mice weighing 20 Gm. were inoculated with a suspension of virus of such concentration that 0.03 cc. of the inoculum caused the death of from 85 to 100 per cent of the animals in five to seven days. On the seventh day a dying mouse was killed and its brain removed aseptically and emulsified in a sterile mortar with sterile physiologic solution of sodium chloride. Sufficient diluent was used so that 0.05 or 0.1 cc. of the heated resultant product produced in individuals with lymphogranuloma inguinale a papule not less than 7 mm. in diameter, usually from 7 to 10 mm. This figure was chosen in accordance with Frei's original work, in which it was stated that a good positive test manifested itself as a papule from 0.75 to 1 cm. in diameter. It was found that 0.05 cc. of a 1 in 10 dilution or 0.1 cc. of a 1 in 13 dilution produced such a reaction. It has been our practice since the eighty-eighth passage of the virus to perform the Frei test with 0.1 cc. of a 1 in 13 dilution.

TABLE 1.—*Summary of Frei Tests Performed with Mouse Brain Antigens at the New York Hospital from May 1934 to April 1936*

Antigens Used			Individuals Tested			
L.I.M.B. or N.M.B.	Where Prepared	No. of Different Antigens	L.I. or Non-L.I.	No. of Different Individuals	No. of Tests	Average Diameter of Papule
Positive Tests						
L.I.M.B.	N.Y.H.	95	L.I.	42	118	10.0 mm.
L.I.M.B.	Commercial	41	L.I.	20	53	9.3 mm.
Control Tests						
L.I.M.B.	N.Y.H.	83	Non-L.I.	128	217	3.0 mm.
L.I.M.B.	Commercial	18	Non-L.I.	20	24	3.7 mm.
N.M.B.	N.Y.H.	10	Non-L.I.	107	118	2.2 mm.
N.M.B.	N.Y.H.	10	L.I.	39	57	2.9 mm.
N.M.B.	Commercial	3	L.I.	7	8	3.5 mm.

Meaning of symbols: L.I., lymphogranuloma inguinale; non-L.I., not infected with lymphogranuloma inguinale; L.I.M.B., lymphogranulomatous mouse brain antigen, prepared and standardized according to the authors' method; N.M.B., normal mouse brain antigen prepared in the same manner as L.I.M.B.; N.Y.H., New York Hospital.

Heating of the emulsion was carried out in ampules in a water bath at 60 C. for two hours on one day and for one hour on the next. Sterility tests were performed before and after heating and any material that showed aerobic or anaerobic growth within seven days was discarded. The finished product was placed in sterile rubber-stoppered vials and stored in the refrigerator. Sterility tests were repeated at intervals when the material was kept over a long period.

3. Control Antigens: These were prepared from normal mouse brains in the same dilution as the test antigens.

Subjects Tested.—1. Individuals with Lymphogranuloma Inguinale: Fifty different individuals known to have or have had lymphogranuloma inguinale were used. The group was composed of thirty-four white and sixteen colored persons, of whom thirty-seven were males and thirteen females. Twenty-three individuals presented the inguinal type and twenty-seven the anorectal type of the disease; fourteen patients of the latter type were white males.

Forty-two individuals received 118 tests with the ninety-five different specimens of our own lymphogranulomatous mouse brain antigen, and thirty-nine received fifty-seven tests with our own normal mouse brain antigen. The forty-one commercial antigens were employed for a total of fifty-three tests in twenty individuals, while commercial normal mouse brain antigen was used for eight tests in seven persons.

2. Individuals Not Infected with Lymphogranuloma Inguinale: One hundred and twenty-eight persons made up the group of control individuals, all of whom were obtained from the general medical and surgical services. There was no history or clinical sign suggestive of lymphogranuloma inguinale among the group. Two asthmatic individuals were included and neither showed untoward local or general reactions to inoculations with normal mouse brain antigen or lymphogranulomatous mouse brain antigen. The entire group was tested with our lymphogranulomatous mouse brain antigen for a total of 217 tests, while 107 of them received 118 tests with our normal mouse brain antigen. Commercial lymphogranulomatous mouse brain antigen was used in twenty of these individuals for a series of twenty-four tests.

Performance of the Frei Test.—The tests were made by intradermal inoculation in the usual manner, and the results read at the end of forty-eight and seventy-two hours.

SIZE OF POSITIVE AND CONTROL REACTIONS

An analysis of the size of the reactions which appeared from forty-eight to seventy-two hours after intradermal inoculation with lymphogranulomatous mouse brain antigen and normal mouse brain antigen in subjects with and without lymphogranuloma inguinale follows:

Measurements of the papules only were used in this analysis, since the size of the surrounding zone of erythema which usually was present in positive tests varied within wide limits and was therefore regarded as a less reliable indicator of the degree of reaction. Accurate measurements were easily made with a thin flexible scale and were facilitated by indenting the periphery of the papule at 90 degree intervals with the nail of the palpating finger. Measurements were recorded in millimeters, and it was our custom to take two diameters of the papule, each at right angles to the other.

Reactions to Lymphogranulomatous Mouse Brain Antigen in Subjects with Lymphogranuloma Inguinale.—The size and appearance of reactions produced by use of our own and of commercial antigens in subjects with lymphogranuloma inguinale agreed very closely. The true average diameter of the papules given by our antigens in the series of 118 tests was 10 mm. and that given by commercial antigens in the series of fifty-three tests was 9.3 mm. The distribution of papule size obtained in both groups of tests was practically the same. Of the total 171 tests performed with both New York Hospital and commercial antigens, 129, or 75 per cent, showed papules from 7 to 10 mm. in diameter, thirty-two, or 19 per cent, showed papules from 10 to 15 mm. in diameter, and the remaining ten, or 6 per cent, were larger. Eight of the ten largest reactions were from 16 to 20 mm. papules and one

measured 30 by 22 mm. The largest reaction observed resulted from the use of one of our antigens in a white woman who had anorectal lymphogranuloma of twenty years' duration following an inguinal infection nine years previously. The reaction consisted of an erythematous indurated area 37 mm. in diameter, which contained a central black necrotic portion 25 mm. in

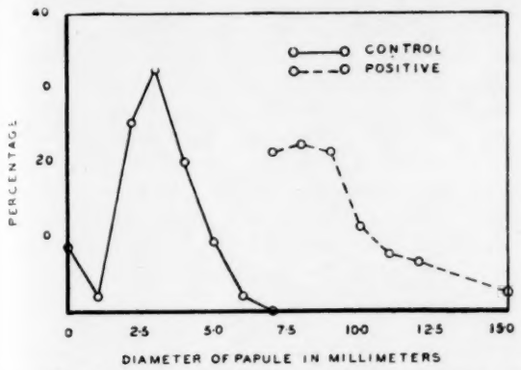

Fig. 1.—The distribution of papule size in 424 control tests and 171 positive Frei tests following the use of thirteen normal and 136 standardized lymphogranulomatous mouse brain emulsions. The ten largest reactions are omitted because of difficulty in representing very small percentages. It must be remembered that, just as occurs with human pus antigen, the papular reaction to lymphogranulomatous mouse brain antigen in certain cases of lymphogranuloma inguinale may be smaller than that regarded as positive. Thus, in the early stage of the disease, before cutaneous allergy is well developed and in debilitated or cachectic individuals, the Frei reaction may be weakened or entirely negative. Six individuals, not included in the chart or paper, fell into this group.

diameter covered with minute vesicles. The distribution of papule size in positive tests is shown in figure 1.

Forty of the fifty individuals with lymphogranuloma inguinale received two or more tests with different specimens of our and commercial lymphogranulomatous mouse brain antigen. The same person showed approximately the same size of reaction at each test. Thirty-seven of the fifty subjects, or 74 per cent, produced papules from 7 to 10 mm. in diameter, nine, or 18 per cent, gave papules from 10 to 15 mm. in diameter, and the remaining 8 per cent showed larger responses. We feel, therefore, that the variation in papule size among the 171 tests occurred by virtue of differences of degree of individual hypersensitivity. There was no apparent relation between the degree of reaction produced with lymphogranulomatous mouse brain antigen and that produced with normal mouse brain antigen in the same individual with lymphogranuloma inguinale. The reactions to control tests with normal mouse brain antigen will be dealt with later.

Figure 2 shows the variation in size of papules produced in different individuals with lymphogranuloma inguinale by the use of lymphogranulomatous mouse brain antigen and normal mouse brain antigen.

It is common knowledge that the papule in a strongly positive Frei test is often surmounted by vesicles or pustules which may later break down to form an ulcerated area. Of the 171 reactions to lymphogranulomatous mouse brain antigen, seventy were of this type.

We have also observed unusual reactions in twelve individuals in which an erythematous indurated area studded with pinhead-size papules replaced the usual single erythematous papule. These reactions, which are not included in table 1 or figure 1, ranged from 7 by 7 mm. to 35 by 33 mm. They were regarded as positive in all cases, as each of the twelve subjects on other occasions showed the usual type of positive response. Similar diffuse reactions were sometimes observed when human pus antigen was used.

Control Tests: Reactions to Normal Mouse Brain Antigen in Subjects With Lymphogranuloma Inguinale and to Lymphogranulomatous Mouse Brain Antigen and Normal Mouse Brain Antigen in Subjects Without Lymphogranuloma Inguinale.—In order to prove that the reactions dealt with in the previous section were susceptible of being produced only with lymphogranulomatous mouse brain antigen in subjects with lymphogranuloma inguinale and that they could not be evoked by the use of normal mouse brain antigen or lymphogranulomatous mouse brain antigen in subjects not infected with lymphogranuloma inguinale, the following tests were done:

A total of 424 control tests were performed in 128 individuals not infected with lymphogranuloma inguinale and forty-six individuals with lymphogranuloma inguinale with our and commercial antigens. The reactions obtained in the sixty-five tests with normal mouse brain antigen in individuals with lymphogranuloma inguinale, the 241 tests with lymphogranulomatous mouse brain antigen and the 118 tests with normal mouse brain antigen in persons not infected with lymphogranuloma inguinale resembled each other closely. They all, with a few exceptions, produced small papules, which occasionally were surrounded by a small area of erythema. Some papule formation was to be expected, since the material injected contained a considerable proportion of foreign substance (10 per cent mouse brain). The true average size of reactions for each group of tests is given in table 1. It will be noted that the average papule size in these tests was well below that of the positive tests. We have observed, however, that the responses to normal mouse brain antigen in subjects not infected with lymphogranuloma inguinale tended to be slightly

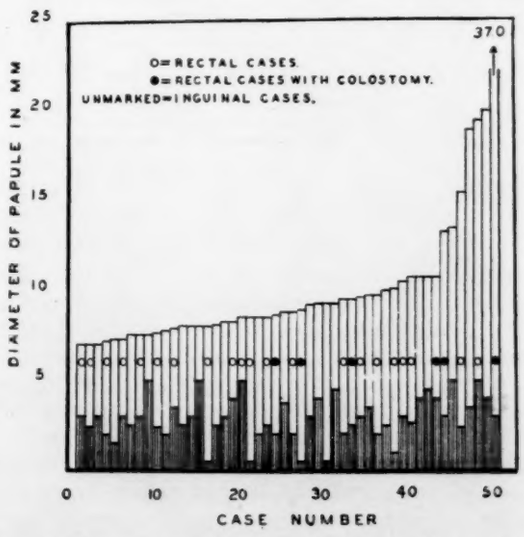

Fig. 2.—Reactions to lymphogranulomatous mouse brain antigen and normal mouse brain antigen in individual subjects with lymphogranuloma inguinale. Ordinate: Shaded section of each bar represents reaction to normal mouse brain antigen; whole bar represents reaction to lymphogranulomatous mouse brain antigen. Abscissa: Individuals are arranged according to degree of reactivity to lymphogranulomatous mouse brain antigen.

smaller than the reactions to lymphogranulomatous mouse brain antigen in the same subjects or to normal mouse brain antigen in patients with lymphogranuloma inguinale.

An analysis of individual reactions showed that in 374, or 88.6 per cent, of the control tests there was either no reaction or the formation of papules rang-

ing from 1 to 4 mm. in diameter. In forty-two, or 9.9 per cent, the papules were 5 mm. in diameter, and in eight, or 1.5 per cent, the papules attained a 6 mm. size (fig. 1). We feel, however, that although the 6 mm. papule approached a diameter that might be confused with a positive test, the confusion was more apparent than real. It was our impression that the 6 mm. papule of a negative test did not extend above the surface of the skin as markedly as did the 7 mm. papule of a positive test, nor was it as erythematous.

Two individuals showed reactions to normal mouse brain antigen and lymphogranulomatous mouse brain antigen that were suggestive of the presence of hypersensitivity to mouse brain protein. While the papules produced with either normal mouse brain antigen or lymphogranulomatous mouse brain antigen were no larger than those seen in the usual negative tests, there was a considerable surrounding erythematous zone, which was studded with pinhead size vesicles and was extremely pruritic. No history of sensitivity to other substances could be obtained in either of these persons.

1. *Reactions to Lymphogranulomatous Mouse Brain Antigen of Various Ages in Subjects with Lymphogranuloma Inguinale.*—The tests with our lymphogranulomatous mouse brain antigen in individuals with lymphogranuloma inguinale were made over a period of one through 251 days after preparation of the antigens. Twenty-eight of the tests were performed within the first month after preparation or before the time when, according to Strauss and Howard, changes in the properties of mouse brain antigen take place. Of the tests carried out with older antigens, thirty-one were made with materials that were from 29 to 60 days old, and fifty-nine with antigens that were from 61 to 251 days of age.

There was practically no difference in the reactions produced with antigens that were used within one month after preparation from those produced with antigens that were used as long as eight months after preparation. The distribution of papule size and true average size of papule were about the same for each time interval considered.

TABLE 2.—*Reactions Produced in Positive and Control Frei Tests by the Use of Lymphogranulomatous Mouse Brain Antigens and Normal Mouse Brain Antigens of Various Ages*

Type of Test		Ages of Antigen Used in Days									
		1–14	1–28	15–28	29–60	61–120	61–251	93	121–382	309–422	615–636
L.I.M.B. (N.Y.H.) in L.I. subjects	Number of antigens	..	25	..	27	..	51	..	..	..	..
	Number of subjects	..	18	..	27	..	26	..	..	..	..
	Number of tests	..	28	..	31	..	59	..	..	..	..
	Average papule diameter, mm.	..	10.0	..	10.4	..	9.6	..	.	..	..
L.I.M.B. (commercial) in L.I. subjects	Number of antigens	..	11	..	11	13	..	..	12	..	..
	Number of subjects	..	5	..	7	7	..	..	7	..	.
	Number of tests	..	13	..	13	13	..	..	14	..	..
	Average papule diameter, mm.	..	9.5	..	8.9	8.5	..	..	10.2	..	..
L.I.M.B. (N.Y.H.) in Non-L.I. subjects	Number of antigens	6	..	12	37	..	43	..	..	..	4
	Number of subjects	37	..	30	41	..	37	..	..	.	4
	Number of tests	40	..	32	71	..	66	..	.	..	8
	Average papule diameter, mm.	3.4	..	3.5	2.7	..	2.9	..	..	..	3.7
N.M.B. (N.Y.H.) in Non-L.I. subjects	Number of antigens	2	..	2	2	..	..	2	..	..	..
	Number of subjects	21	..	19	23	..	..	4	..	..	..
	Number of tests	21	..	19	23	..	..	4	..	..	..
	Average papule diameter, mm.	2.2	..	3.1	2.8	..	..	3.7	..	..	..
N.M.B. (commercial) in L.I. subjects	Number of antigens	..	..	3	..	..	..	..	..	3	..
	Number of subjects	..	..	3	..	..	..	..	..	4	..
	Number of tests	..	..	4	..	..	..	..	..	4	..
	Average papule diameter, mm.	..	..	3.0	..	..	..	..	..	3.7	..

EFFECT OF AGE OF LYMPHOGRANULOMATOUS MOUSE BRAIN ANTIGEN AND NORMAL MOUSE BRAIN ANTIGEN ON SIZE OF REACTIONS PRODUCED

Strauss and Howard [1] object to the use of Frei antigens made from mouse brains on the basis of a few experiments which they feel demonstrated that "some change occurs in antigens made from mouse brains within a few weeks after preparation which, when injected intradermally, gives rise to a reaction almost indistinguishable from a true positive reaction." The nature of this change is unknown to them but they believe that it occurs in antigens made from normal as well as lymphogranulomatous mouse brains and that the reaction may be induced in subjects not infected with lymphogranuloma as well as in subjects with lymphogranuloma inguinale.

In order to discover whether such a change actually takes place with antigens prepared according to the method previously described, the results obtained with normal mouse brain antigen and lymphogranulomatous mouse brain antigen in subjects with lymphogranuloma inguinale and subjects not infected with lymphogranuloma inguinale, subjects were divided into a number of groups, each group representing an interval of time which had elapsed between the date of preparation and the use of the antigen.

The results obtained with commercial antigens were analyzed from the same aspect. The shortest interval that elapsed between preparation and use of antigens was ten days, and the longest was 382 days. A separation of the tests into groups depending on the age of the antigen employed revealed results similar to those obtained by the use of our antigen. The true average size of reactions obtained with antigens used from 121 through 382 days after preparation was a little larger than those given by fresher antigens. This difference was due, however, to the presence of two large reactions in the former group that were given by unusually strong reactors. The same antigens that produced these large reactions gave papules from 2 to 4 mm. in diameter in subjects not infected with lymphogranuloma inguinale when tested on the same date as in the subjects with lymphogranuloma inguinale.

2. *Reactions to Lymphogranulomatous Mouse Brain Antigen of Various Ages in Subjects Not Infected with Lymphogranuloma Inguinale.*—Our lymphogranulomatous mouse brain antigens which were used in the tests in subjects not infected with lymphogranuloma inguinale ranged in age from 9 to 636 days. In forty tests the antigens were employed within two weeks after preparation, and in thirty-two others from fifteen to twenty-eight days after preparation. The remainder

of the tests were made with antigens more than four weeks old, of which seventy-one were carried out with antigens from 29 to 60 days old, sixty-six with material that was from 61 to 251 days old, and eight with antigens that were prepared almost two years previously. Antigens used within two weeks after preparation gave practically the same size of reaction as

Fig. 3.—Seventy-two hour reactions to normal mouse brain antigen and commercial lymphogranulomatous mouse brain antigen in a colored male who had suppurating inguinal adenitis of three and one-half years' duration due to lymphogranuloma inguinale. The papules and area of erythema are ringed. One-half natural size. 1. Control reaction to normal mouse brain antigen. 2. Positive reaction to lymphogranulomatous mouse brain antigen. Note the pustule surmounting the papule.

those which were almost two years old. No reactions that could be interpreted as positive were observed in these control tests.

Analysis of the effect of age on lymphogranulomatous mouse brain antigen revealed that there was neither an increase nor a diminution in the size of reactions produced by our antigens within 636 days and by commercial antigens within 382 days after preparation.

3. *Reactions to Normal Mouse Brain Antigen of Various Ages in Subjects Not Infected with Lymphogranuloma Inguinale.*—In only sixty-seven of the 118 tests made in individuals not infected with lymphogranuloma inguinale with our normal mouse brain antigen were the dates of preparation of the antigen known. These sixty-seven tests were performed in as many different individuals with emulsions of normal mouse brain antigen which were prepared from five to ninety-three days previously. Although the smallest average size of reaction was obtained with antigens used less than ten days after preparation, the increase in size over this given by the older antigens was negligible and could not be regarded as an indication of a change in the properties of the antigen sufficient to produce false positive results.

4. *Reactions to Normal Mouse Brain Antigen of Various Ages in Subjects with Lymphogranloma Inguinale.*—The results obtained by the use of our and commercial normal mouse brain antigen of varying ages in subjects with lymphogranuloma inguinale closely paralleled the results observed in subjects not infected with lymphogranuloma inguinale with the same material.

To sum up the work dealt with in this part of the paper, it can definitely be said that no appreciable change demonstrable by the performance of an intradermal test in individuals with lymphogranuloma inguinale or not infected with lymphogranuloma occurred in normal mouse brain antigen or standardized lymphogranulomatous mouse brain antigen at any period up to two years after preparation of the antigens.

COMMENT

Any suspension of a foreign substance, particularly protein when injected intradermally into a human subject, will produce an inflammatory response at the site of inoculation. The reaction will occur despite the fact that the material may be chemically inert and free from living or dead micro-organisms. The severity of the reaction will be influenced by the nature of the material and the presence or absence of hypersensitivity to the material in the individual inoculated. These facts must be considered in the interpretation of the cutaneous response in a Frei test regardless of whether the test is performed with mouse brain antigen or with human pus antigen.

The Frei reaction is an allergic phenomenon and occurs only when material containing the killed virus of lymphogranuloma inguinale is inoculated intradermally into individuals who have or have had the disease. Thus far it has not been found possible [5] to separate the virus from the tissue in which it is found; therefore Frei antigen of necessity contains a large proportion of dead disintegrated tissue. This is true both for

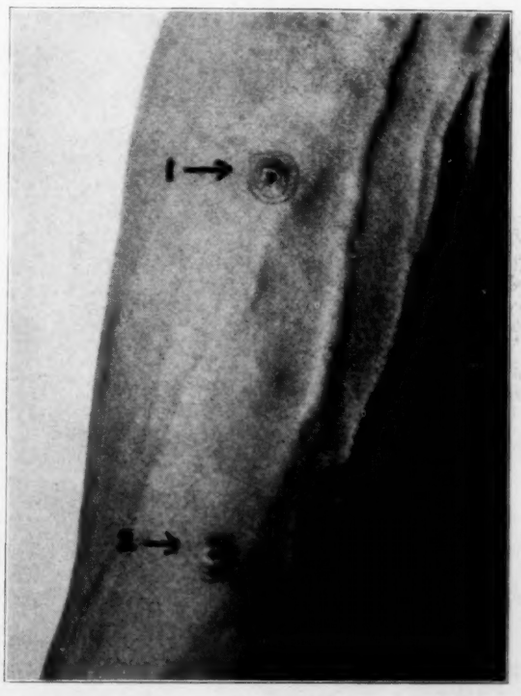

Fig. 4.—Seventy-two hour positive reactions to two other commercial lymphogranulomatous mouse brain antigens in the same subject as figure 3. Sloughing of the central portion of the papules is present. The papules and areas of erythema are ringed. One-half natural size.

mouse brain and human pus antigens. The products of tissue disintegration are capable of producing an inflammatory response on intradermal inoculation.[6]

5. Except to a certain degree in the antigen prepared according to the method of Tamura, J. T.: Cultivation of Virus of Lymphogranuloma Inguinale and Its Use in Therapeutic Inoculation, J. A. M. A. **103**: 408 (Aug. 11) 1934.

6. Wells, H. G.: Chemical Pathology, Philadelphia, W. B. Saunders Company, 1925.

Unless one is familiar with the type and degree of such responses, errors may be made in evaluating the reaction to a Frei test.

Lymphogranulomatous mouse brain emulsions prepared and standardized according to the methods described in this paper produced in 75 per cent of the tests in individuals with lymphogranuloma inguinale high, well defined papules from 7 to 10 mm. in diameter. The remaining 25 per cent of tests showed papules larger than 10 mm. in diameter. In no instance was the diameter of the papule less than 7 mm. All the papules were erythematous and were usually surrounded by a zone of erythema as well. Frequently they were surmounted by pustules or vesicles, which were sometimes followed by ulceration of the central portion of the papule.

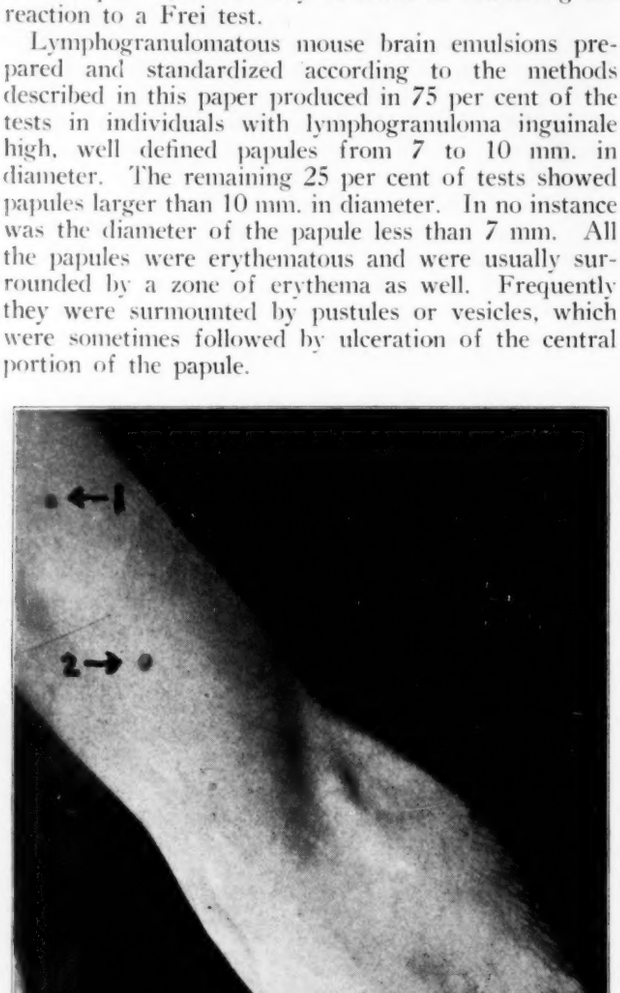

Fig. 5.—Seventy-two hour control reactions to normal mouse brain antigen and lymphogranulomatous mouse brain antigens of various ages in a subject not infected with lymphogranuloma inguinale. One-half natural size. 1. Reaction to lymphogranulomatous mouse brain antigen used 636 days after preparation. 2. Reaction to lymphogranulomatous mouse brain antigen used 633 days after preparation. 3. Reaction to normal mouse brain antigen used ninety-three days after preparation. 4. Reaction to lymphogranulomatous mouse brain antigen used thirty-five days after preparation.

Determination of the degree of the nonspecific response caused by the presence of the broken-up brain tissue in mouse brain antigen was made in the series of control tests. In no instance was this response equivalent to a positive test. Usually a papule was produced which was from 1 to 4 mm. in diameter and of varying degrees of erythema. In a small percentage of the reactions (1.5 per cent) 6 mm. papules were obtained, but these were less erythematous and lower than the smallest, 7 mm., papule produced in positive reactions. The formation of pustules and vesicles was never observed in control tests except in two cases in which there was vesiculation accompanied by marked pruritus. It was felt that the latter reactions were possibly due to hypersensitivity to mouse brain protein. The reactions of subjects not infected with lymphogranuloma inguinale to inoculation of antigens prepared from mouse brains infected with lymphogranuloma inguinale were practically the same as the reactions to normal mouse brain material.

In a small series of unpublished tests we attempted to determine the quality and size of nonspecific reactions produced by the extraneous material present in human pus antigen. Fourteen subjects not infected with lymphogranuloma inguinale were inoculated intradermally with three different specimens of human pus antigen of various ages for a series of twenty-six tests. In twenty-one of these tests, papules were obtained which ranged from 1 to 4 mm. in diameter and the remaining five tests merely showed small areas of erythema. The papules differed from those obtained in control tests with mouse brain antigens chiefly in that they were somewhat less erythematous and were, on the average, slightly smaller. The difference, however, may be explained on the basis that human pus is a less foreign substance than mouse brain, and consequently a less severe inflammatory response would be expected to accompany its use.

It is the larger size and more erythematous nature of nonspecific reactions to lymphogranulomatous mouse brain antigen that may lead those familiar only with reactions produced by human pus antigen into erroneous conclusions as to the specificity of the former material. On this account we advocate the use of normal mouse brain antigen as a control concurrently with lymphogranulomatous mouse brain antigen in the performance of the Frei test.

Our experience has convinced us that there is a large enough difference between the specific and nonspecific reactions to standardized lymphogranulomatous mouse brain antigen to make this material, with all its advantages over human pus antigen, the most suitable for the performance of the Frei test. Furthermore, we have shown that no changes occur in the antigen on standing for at least one year which alter the quality or size of the specific or nonspecific reactions produced by it.

SUMMARY

1. Lymphogranulomatous mouse brain antigen prepared and standardized according to the method described [L. I. M. B.] possesses none of the disadvantages of human pus antigen for the performance of the Frei test.

2. Ninety-five specimens of our lymphogranulomatous mouse brain antigen and forty-one specimens of commercial lymphogranulomatous mouse brain antigen were employed for a series of 171 tests in fifty individuals who were known to have had lymphogranuloma inguinale.

3. The same antigens were also used in 128 persons who never had lymphogranuloma inguinale for a group of 241 control tests. One hundred and eighty-three tests were carried out in subjects both with and without lymphogranuloma inguinale with antigens made from normal mouse brain [N. M. B.].

4. A typical positive reaction resulted from every test with lymphogranulomatous mouse brain antigen in subjects with lymphogranuloma inguinale in which the erythematous papule produced was never smaller than 7 mm. in diameter, and in 75 per cent of the cases was from 7 to 10 mm. in diameter.

5. In none of the 424 control tests was a papule produced as large as 7 mm. in diameter. The greater number of control reactions (88.6 per cent) showed papules from 1 to 4 mm. in diameter.

6. The difference between positive and control tests was readily recognizable. The use of a control test with normal mouse brain antigen concurrently with lymphogranulomatous mouse brain antigen was advocated.

7. No change was observed to occur in either our or commercial lymphogranulomatous mouse brain antigen and normal mouse brain antigen on standing for any length of time up to two years after preparation which would make lymphogranulomatous mouse brain antigen unsatisfactory material for the performance of the Frei test.

8. Consequently, it is felt that standardized lymphogranulomatous mouse brain antigen is the most suitable material for the routine performance of the Frei test.

52 East Sixty-Eighth Street.

TULAREMIA WITH PLEURAL EFFUSION

CASE IN WHICH BACTERIUM TULARENSE WAS ISOLATED FROM PLEURAL FLUID DURING LIFE

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AND
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During the thirty years that tularemia has been recognized, interest has increased in the pleuropulmonary manifestations of the disease. Blackford[1] recently reported a series of thirty-five consecutive cases of tularemia, of which approximately half showed clinical evidence of involvement of the thoracic viscera and more then 90 per cent showed x-ray abnormalities that might be attributed to the disease; he concluded that intrathoracic infection was frequent in patients who recover. He classifies the clinical signs in the chest as (1) tularemic pneumonia, (2) tularemic bronchitis and (3) tularemic pleural effusion. Archer, Blackford and Wissler[2] describe the roentgenologic observations in the same series of cases. Tularemia with pleural effusion seems to be the least frequent of the three, appearing in Blackford's series in three cases, compared with seven each of tularemic pneumonia and bronchitis. Since tularemia with pleural effusion, in the weeks following the acute onset, so closely resembles both clinically and roentgenologically the wet pleurisy of tuberculosis, diagnosis, especially in the typhoidal type, may be rather difficult. It would be of great assistance in establishing the final diagnosis in doubtful cases if the causative organism could be obtained by culture or inoculation, but, strangely enough, Bacterium tularense, like the tubercle bacillus, is not easily isolated from the pleural fluid. In only three cases of tularemic pleurisy has the isolation of Bacterium tularense from the pleural effusion during life been reported. Gudger[3] describes a case in which the organism was found in the pleural fluid, evidently before death. This patient succumbed in thirty-one days and the report includes the necropsy. In two instances the organism was found by Francis: the first a case of Blumberg and Russell[4] and the other a case of Schrieber and Cajigas.[5] The case about to be described is the fourth.

REPORT OF CASE

R. A., a white man, aged 55, a truck driver, had enjoyed excellent general health until the present illness. His family and past histories were negative for tuberculosis. Sometime between Nov. 1 and 15, 1935, he shot and skinned a wild rabbit. He recollects that the rabbit seemed lively before being hit (no abnormality of the meat was noted) and there were no cuts or abrasions on his hands or fingers at the time. Likewise, November 15 he skinned two more wild rabbits that had been shot by some one else. His good health continued until November 26, when a rather severe headache developed which became so intense on the following day that he was forced to stop work. In addition he felt extremely weak, lost his appetite and had fever to 103.5 F., and chills. The patient was put to bed by his family physician but continued to have a fever and in one or two days pain developed on deep inspiration in the right side of the chest, relieved by strapping. There were also night sweats, some dyspnea and a slight cough but no expectoration or hemoptysis. No ulcerations could be found on the extremities, no adenopathy nor any eye signs; the liver and spleen were not palpable. The temperature returned to normal in two weeks, with evening elevations to 99.5, but the symptoms of pleurisy continued. On the twelfth day the right side of the chest was tapped and 700 cc. of clear, amber fluid was withdrawn, smears of which were negative for tubercle bacilli. The urine at that time showed slight albumin and numerous white blood cells. December 10 he was taken to the local hospital, where a roentgenogram showed pleurisy at the right base. Examination of the blood revealed red blood cells 4,250,000, hemoglobin 90 per cent and white blood cells 7,800, with 62 per cent polymorphonuclears and 38 per cent lymphocytes. The headache, chills and anorexia had disappeared, although he was still weak, and because of the pleurisy with effusion he was admitted for observation to the Maryland Tuberculosis Sanatorium, December 20.

Fig. 1.—Tularemic pleural effusion one month after onset. Bacterium tularense was recovered from the pleural fluid two and one-half months later.

Physical examination revealed signs of pleurisy at the right base; i. e., impaired note anteriorly and posteriorly below the third rib and fourth vertebral spine, with suppressed breathing. No râles were heard. The only other finding of interest was a moderate dental caries. Roentgenograms of the thorax showed clouding of the right apex, with dense clouding from the fourth rib to the base (fig. 1). Although there was an old, slight fibrosis above the first rib on the left, there was nothing in the visible parenchyma that could be interpreted as an active tuberculosis. The urine contained white blood cells ++ and no albumin. After several weeks of bed rest it was noticed that the temperature, while remaining normal for periods of about six days, would rise on the evening of the sixth or seventh day to 100 or 101, returning to normal on the following day (fig. 2). The sputum was negative for tubercle bacilli on nine examinations; Kahn and Kolmer tests for syphilis were negative. Because of the persistently negative sputums and the peculiar temperature curve,

From the Maryland Tuberculosis Sanatorium.
The authors are indebted to Drs. Edward Francis, A. T. Brice and Elizabeth R. Wilkens for their assistance in preparing this paper and to the Bureau of Bacteriology of the Maryland State Department of Health, which isolated the organism.

1. Blackford, S. D.: Pulmonary Manifestations in Human Tularemia, J. A. M. A. **104**: 891 (March 16) 1935.
2. Archer, V. W.; Blackford, S. D., and Wissler, J. E.: Pulmonary Manifestations in Human Tularemia, J. A. M. A. **104**: 895 (March 16) 1935.
3. Gudger, J. R.: Tularemic Pneumonia: Report of a Case, J. A. M. A. **101**: 1148 (Oct. 7) 1933.
4. Blumberg, A., and Russell, R. L.: Intrathoracic Changes in Tularemia, South. M. J. **27**: 578 (July) 1934.
5. Personal communication to the authors.

it was thought advisable to do agglutination tests on the blood, and Feb. 25, 1936 (three months after onset), the serum showed positive agglutination for Bacterium tularense in dilutions of 1:320, with no cross agglutination for Brucella melitensis. The history of handling a rabbit was first elicited at this time. Further blood studies showed hemoglobin 79 per cent (Sahli), red blood cells 4,000,000, white blood cells 8,200 with 47 per cent polymophonuclears, 2 per cent eosinophils, 2 per cent basophils, 16 per cent monocytes, 32 per cent lymphocytes and 1 per cent unclassified. Platelets were normal, with some macrocytosis and pallor of the red blood cells. There was an unusually rapid blood sedimentation rate, 27 mm. in one hour. Mantoux tests were performed with purified protein derivative. No reaction occurred with the first strength (0.00002 mg.) but there was a strong reaction to the second strength (0.005 mg.).

March 3 (three and one-half months after onset), a third roentgenogram having revealed the pleurisy slightly more dense, the right side of the chest was tapped posteriorly and 300 cc. of a slightly cloudy, yellowish brown fluid was aspirated, which formed a heavy coagulum inside of half an hour. The specific gravity of this fluid was 1.026. It contained 5,575 white blood cells and an equal number of red blood cells (probably from operative trauma). A differential count on the white blood cells gave 96 per cent lymphocytes, mostly large, and 4 per cent polymorphonuclears. Gram and acid-fast stains on centrifugated specimens revealed no bacteria. The pleural fluid strongly agglutinated Bacterium tularense in dilutions of 1:640, even higher than the blood serum. Some of the exudate was inoculated into guinea-pigs, from which Bacterium tularense was isolated in twelve days. A subculture was sent to Dr. Francis in Washington, D. C., who confirmed the organism. No guinea-pigs were inoculated for tubercle bacilli.

Four days later another attempt was made to secure pleural fluid. This time, however, aspiration was difficult, the needle frequently clogged and only 50 cc. could be secured for culture and, unfortunately, that tube was broken before reaching the laboratory. Aspiration was tried for the third time March 24 but no fluid was obtained.

The treatment up to the time of aspiration had been palliative with bed rest and washroom privileges. The only symptom, weakness, which the patient had had on admission to the sanatorium, had gradually disappeared. After aspiration of the pleural fluid the temperature, which up to that time had continued to evidence rises at intervals of six or seven days, dropped to normal and showed no more of this peculiarity. There was a single rise to 100 F. the afternoon of the last aspiration; since then it has not gone above 99 F. He gained 23 pounds (10.4 Kg.).

The pleurisy appeared slightly less dense in a roentgenogram taken March 21. Blood studies done a few days later were

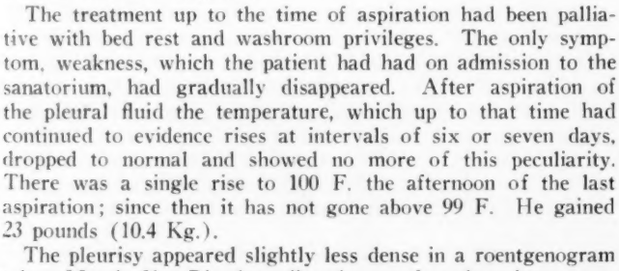

Fig. 2.—Tularemic pleural effusion. Periodic rises in temperature during the chronic stages of the illness.

comparable to those of the previous month. Red blood cells were 4,320,000, hemoglobin 83 per cent and white blood cells 6,800 with polymorphonuclears 54 per cent, eosinophils 4 per cent, basophils 1 per cent, monocytes 11 per cent and lymphocytes 28 per cent, unclassified 2 per cent. The blood sedimentation rate continued to be rapid at 24 mm. in one hour.

Four and one-half months from onset the blood serum titer for Bacterium tularense had risen to positive in 1:2,560, doubtful to 1:5,120. Never has it or the pleural fluid shown any cross agglutination for undulant fever. The urine returned to normal. In the final x-ray film (fig. 3) there were still residual pleuritic shadows at the right base, but these were less dense than previously. He was discharged, April 12, as greatly improved, to continue rest at home.

COMMENT

Clinical and roentgenologic evidence in this case resemble closely the appearance of the usual tuberculous pleurisy. Only after numerous negative sputums was the blood serum examined and found to agglutinate Bacterium tularense. Of course there was the typical history, but without ulceroglandular or glandular lesions neither the patient nor the physicians thought of that until after the results of the agglutination tests were known. With the history, the positive agglutination of the blood and pleural fluid and the isolation of the organism from the pleural fluid, it can be definitely said that the pleurisy was the result of infection by Bacterium tularense. Unfortunately, guinea-pigs were not inoculated with the pleural fluid for tuberculosis, but the negative sputums, the inability to stain tubercle bacilli in the centrifugated pleural fluid and absence of any definite parenchymal lesion in the x-ray film support the belief that we are here dealing with a manifestation of tularemia alone.

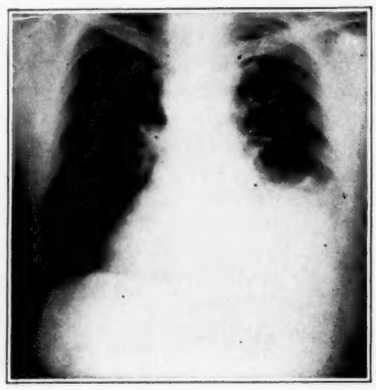

Fig. 3.—Tularemic pleural effusion four and one-half months after onset. The pleural fluid has absorbed, leaving residual clouding.

When in cases of pleural effusion the organism, either the tubercle bacillus or Bacterium tularense cannot be isolated by culture or inoculation, although the blood and the pleural effusion agglutinate for tularemia, is it safe to make a diagnosis of the latter disease? In the ulceroglandular, glandular or oculoglandular case it probably is, but in the typhoidal type let it be remembered that agglutinins for tularemia have been shown to remain present in the blood serum for years, and it is quite possible to have a tuberculous effusion develop in a patient who has a blood serum with positive agglutination to a tularemic infection incurred months or years before. Until we can discover better clinical or roentgenologic means of differentiating tuberculous pleurisy and tularemia with pleural effusion, the isolation of the organism remains the deciding criterion for diagnosis during life in the typhoidal type of case.

The clinical, laboratory and x-ray examinations on this patient agree essentially with those reported in similar cases, with some slight differences. For two and one-half months following the subsidence of the acute symptoms the case had a peculiar febrile course, during which there would be normal temperature for a period of six or seven days followed by a sharp evening rise to 100 or 101 F., falling again the following day. Others have reported relatively low pulse rates in cases of tularemic pleural effusion. It is not known whether this was so in this patient during the first three weeks, but the pulse was not relatively slow in the succeeding months at the sanatorium. Blackford reported normal leukocyte counts in his three cases. While this patient had total white blood cell counts within normal limits, the differential counts showed a slightly increased percentage of lymphocytes and monocytes and a decrease of polymorphonuclears in the chronic stages. In a case of tuberculosis this blood picture, according to Medlar,

would indicate resistance with some hyperplasia. Of particular interest was the blood sedimentation rate, which on three occasions during residence dropped 27, 27 and 24 mm. in one hour. The tularemic pleural effusion on examination had the usual characteristics of a tuberculous effusion.

During the chronic stages of the disease, improvement in the patient's condition seemed to take place immediately after aspiration of some of the pleural fluid and was manifested by disappearance of the peculiar temperature and of the remaining symptom, weakness. Parallel with the improvement in the patient was a sharp rise in the agglutinating titer of the blood serum.

A RAPID CULTURAL METHOD FOR THE DIAGNOSIS OF TINEA INFECTIONS

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The dermatomycoses can usually be diagnosed by the clinical picture or the effect of therapy. It is desirable, however, to verify the clinical diagnosis by bacteriologic and specific biologic examinations. In this paper we shall deal only with the bacteriologic aids in diagnosis. There are two methods in general use; first, the direct examination with the microscope after macerating the material with sodium or potassium hydroxide, and, second, the culture on Sabouraud's or other special agar mediums. The first is frequently inadequate and the second requires at least a week before a growth appears. For diagnostic work a more rapid cultural method would be very desirable.

For several years one of us (F. L. B.) had used a simple method, employing a liquid medium of similar composition to Sabouraud's but without the agar. This consisted of placing the suspected material on an ordinary slide, adding a few drops of the medium and covering this with a cover slip, which was then surrounded by wax to prevent drying. The fact that this produced a relatively anaerobic condition was of no importance, as it had been demonstrated [1] that the growth of mycelia was not hindered by anaerobic conditions. Grütz [2] found this method useful in studying sporotrichosis. Later we employed a hanging drop slide similar to that used recently by Hruszek [3] for the microscopic study of mycelial colonies. Davidson and Gregory [4] have also used a similar in situ preparation and emphasize the importance of microscopic study in classifying the dermatophytes.

METHODS

We have compared the results obtained with the hanging drop or "in situ" culture method in ninety cases with those obtained by the direct microscopic examination and culture on Sabouraud's original medium. These cases have all been followed for a sufficient period of time to establish the final diagnosis. The clinical material included forty-eight cases of tinea, among which there were (1) seven cases of tinea of the scalp or beard, four of which were of kerion type; (2) ten cases of tinea of the glabrous skin; (3) four cases with involvement of the groin or axillae; (4) twelve cases of tinea of the hands, which were eczematoid or pustular in character; (5) six cases of tinea of the feet, which were of an eczematoid or intertrigenous nature, and (6) nine cases of onychomycosis.

Forty-two cases of conditions other than tinea were used as controls. These consisted of (1) six scalp cases such as alopecia areata, sycosis vulgaris, seborrhea and pyoderma; (2) fourteen cases of generalized eruptions of the smooth skin including seborrheic dermatitis, contact dermatitis, atopic eczema, psoriasis and stasic dermatitis; (3) four cases of seborrheic dermatitis of the axillae or groin; (4) seven cases of contact dermatitis of the hands and nine scrapings from the palms of normal individuals, and (5) two cases with dystrophy of the nails secondary to contact dermatitis.

The lesions were first cleansed and scrapings were carefully taken with a sterile scalpel. These were usually selected from the periphery of flat lesions, from the under surface of pustules; or if hairs were being

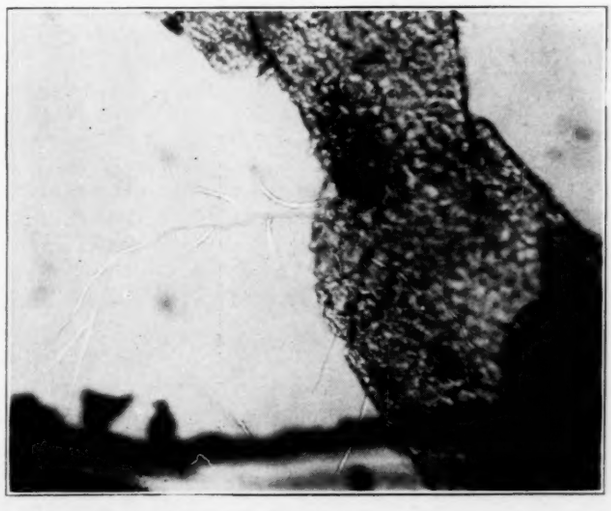

Fig. 1.—Eighteen hour culture, showing early growth from scale of patient with tinea corporis.

examined, broken off ones were used. First, a fresh preparation was made by placing a portion of the material in a drop of 20 per cent potassium hydroxide in the usual manner. This was warmed gently, allowed to stand for thirty minutes and then examined microscopically. Second, Sabouraud's agar [5] slant was inoculated, kept at room temperature and observed daily for a month. Third, a hanging drop preparation was made, using a liquid medium of the following formula: crude maltose of Chanut 4 Gm., peptone of Chassaing 1 Gm. and distilled water to make 100 cc.

A deep hanging drop slide was washed thoroughly, allowed to dry and flamed. Cover slips were kept in an alcohol-ether solution and were dried by being put in the flame. With a sterile loop a small drop of medium

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Studies and Contributions from the Department of Dermatology and Syphilology, University of Michigan Medical School, Service of Dr. Udo J. Wile.

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2. Grütz, O.: Handb. d. Geschlechtskr. (Jadassohn's) **9**: 753, 1928.
3. Hruszek, H.: Dermat. Ztschr. **71**: 23 (March) 1935; Arch. f. Dermat. u. Syph. **172**: 125 (Aug.) 1935.
4. Davidson, A. M., and Gregory, P. H.: Canad. J. Research **10**: 373 (April) 1934.
5. Crude maltose of Chanut 4 Gm., peptone of Chassaing 1 Gm., agar 3 Gm. and distilled water to make 100 cc.

was then carefully placed in the center of the upturned cover slip, scrapings or hairs were added, and the cover slip was quickly turned over and put in place on the slide. If only a small amount of medium was used

Fig. 2.—Twenty-four hour growth.

it would remain suspended in the center of the ring and not run around the margin. The cover slip was then sealed in place with melted paraffin applied to the edges with a heated knife blade. The preparation was incubated at room temperature and examined twice a day with the microscope.

RESULTS

The accompanying table shows a summary of the comparative results obtained by the three methods of mycologic diagnosis for each of the lesions studied. In forty-eight cases of tinea infection, mycelial filaments or spores were demonstrated in sixteen cases by the direct microscopic examination. On Sabouraud's agar medium a definite growth was obtained in thirty-one cases in an average time of 6.1 days. With the "in situ" culture, mycelial growth was demonstrable in thirty-five cases in an average time of 1.8 days. In at least half of these it was clearly visible in twenty-four hours with the aid of the microscope. The growth usually occurred from a number of different points, and this fact is of value in distinguishing a false positive due to chance contamination.

Of the forty-two control cases of other conditions, none showed mycelia by the direct procedure. Mycelial growth occurred in six cases on Sabouraud's agar medium in an average time of 3.4 days, and in five cases in the hanging drop in an average time of 1.5 days.

In the cases of tinea infection, the two cultural methods agreed in all except four cases, while in the other conditions positive growths occurred with only one method in each individual case, and most of these could be readily identified as a common fungus such as the mucor or aspergillus.

COMMENT

The direct microscopic examination was found to be satisfactory for the diagnosis of tinea infections of the scalp and beard if the hairs were selected with care. In the preparations from other areas, however, the chance of finding mycelia was less, and mistakes may

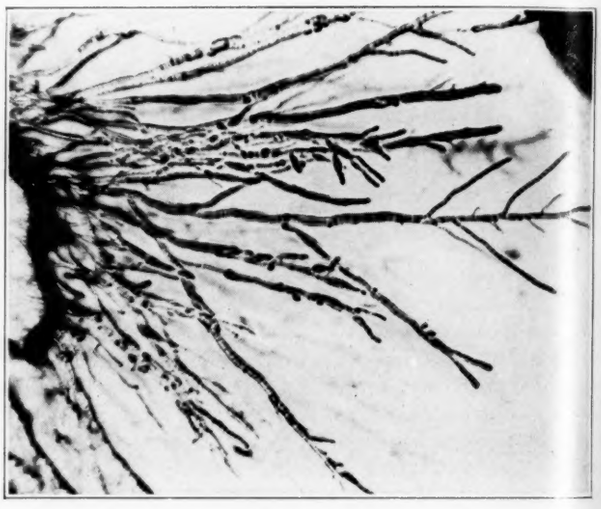

Fig. 3.—Two day old culture.

be made owing to the presence of so-called mosaic structures and other artefacts. In every case it is desirable to have a culture of the micro-organism to establish the diagnosis.

Results Obtained by Three Methods of Mycologic Diagnosis

		I		II				III			
		Direct Microscopic Examination (20% Potassium Hydroxide)		Sabouraud's Agar Medium				Hanging Drop Preparation			
				Positive		Negative		Positive		Negative	
Final Clinical Diagnosis	Number of Cases	Positive	Negative	Number	Average Time, Days	Number	Time, Days	Number	Average Time, Days	Number	Time, Days
Tinea of beard and scalp	7	7	0	6	7.5	1	30	7	2.3	0	..
Tinea of glabrous skin	10	4	6	8	5.3	2	30	8	1.4	2	7
Tinea of axillae and groin	4	1	3	3	6	1	30	4	1.75	0	..
Tinea of hands (eczematoid or pustular)	12	1	10	3	5.3	8	30	6	2	6	7
Tinea of feet (eczematoid or interdigital)	6	1	5	5	7.4	1	30	4	2	1	7
Tinea of nails	9	2	7	6	5	3	30	6	1.9	3	7
Total cases of tinea	48	16	32	31	6.1	17	30	35	1.8	13	7
Total cases of other conditions	42	0	41	6	3.4	35	30	5	1.5	36	7

The "in situ" culture method has permitted microscopic examination of the hyphae, and in those instances in which spores developed these could also be studied in their natural growing relationships. No attempt has been made in this study to classify the organisms found, as we were interested here primarily in describing a cultural method suitable for early diagnosis. If exact classification is desired, culture on Sabouraud's or other special agar mediums will be necessary. Recently we have found it a convenient working plan

to prepare two hanging drop cultures from each case when first seen. If these showed growth, one was then inoculated on Sabouraud's agar medium for further study.

A relatively small percentage of positive cultures was obtained from the control groups of cases. This was contrary to the observations of Bloch [5] and of Benham and Hopkins,[6] who reported the finding of fungi on the skin of the majority of normal individuals examined. Perhaps the difference may be explained by the fact that we cleansed the skin thoroughly with soap and water before taking the scrapings.

The final clinical diagnosis was open to question in a few cases, especially those of the pustular lesions of the hands. Some of these may have been trichophytids and others bacterial infections.

SUMMARY

1. Of the forty-eight cases of tinea infection studied, direct microscopic examination demonstrated mycelial filaments or spores in 33 per cent.

2. Culture of Sabouraud's agar medium gave a positive growth in 64 per cent of the cases in an average time of 6.1 days.

3. The hanging drop culture method described in this paper showed a positive growth in 72 per cent of the cases in an average time of 1.8 days.

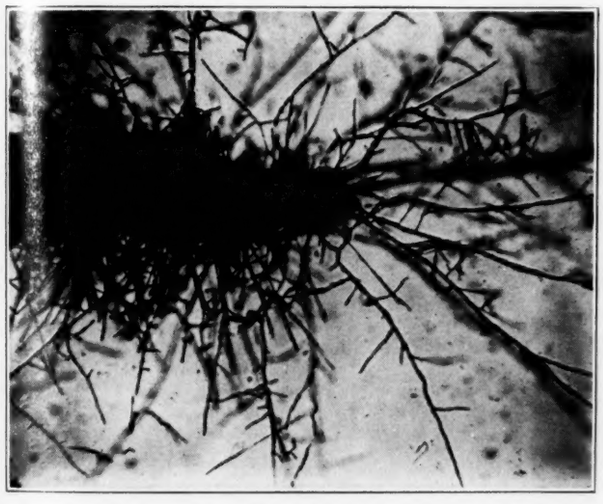

Fig. 4.—Four day old culture of a hair.

4. The hanging drop culture was found to be the most useful laboratory aid in the diagnosis of tinea infections, not only because it is dependable but also because it is simple, inexpensive and requires a very short time to demonstrate growth of the organisms.

5. Bloch, Bruno: Brit. J. Dermat. & Syph. **42:** 569 (Dec.) 1930.
6. Benham, Rhoda W., and Hopkins, Anne McH.: Yeastlike Fungi Found on the Skin and in the Intestines of Normal Subjects, Arch. Dermat. & Syph. **28:** 532 (Oct.) 1933.

The First Accurate Description of the Pelvis.—We are indebted to Andreas Vesalius (1543) for the first accurate description of the pelvis. Prior to the publication of his observations it had generally been believed that the birth of the child could not be effected until the pelvic cavity had become increased in size by the separation and gaping of the pelvic bones. Vesalius demonstrated the fallacy of this conception and showed that the pelvis, for practical purposes, should be considered as an unyielding bony ring.—Stander, H. J.: Williams Obstetrics, New York, D. Appleton-Century Company, 1936, page 1.

DIAGNOSIS OF UNDULANT FEVER

THE OPSONOCYTOPHAGIC, ALLERGIC AND AGGLUTINATION REACTIONS

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The diagnosis of Brucella infections in man has usually been confirmed by a positive agglutination test or a positive blood culture. The agglutination reaction is of especial value, usually during the febrile stage of the disease, and for varying periods after the temperature has become normal. There may be marked variations in both the regularity and the titer of this reaction. A positive agglutination reaction is of great significance, but a negative reaction cannot be relied on particularly in this disease. A positive blood culture is diagnostic of undulant fever but there are certain difficulties which have not been overcome by the average laboratory in obtaining growth of the organism, so that at the present time only a small percentage of cases are diagnosed by this method.

The allergic skin reaction is considered to be a dependable test to determine whether or not an individual is or has been infected with Brucella. It may be used in active cases or as an epidemiologic procedure in population groups to determine the incidence of infection. Although infected persons can be detected by the skin test, it does not give any information as to whether the infection is active or whether the individual is immune. The symptoms that the patient shows may be due to some other cause and a positive skin test may be an incidental observation.

In 1933 Huddleson, Johnson and Hamann [1] reported the results of their studies on the opsonocytophagic activity of the blood and the allergic skin reaction in brucellosis. They stated that in vitro the phagocytosis of Brucella by the polymorphonuclear leukocytes in whole citrated blood is an expression of immunity to Brucella and an indication of the progress toward recovery in active infection. They also stated that a low phagocytic activity in conjunction with a negative allergic skin test is evidence of susceptibility to Brucella infection and that a positive allergic skin test in conjunction with a negative or low opsonocytophagic activity of the blood is evidence of infection with Brucella without immunity.

Since Brucella infections are being discovered more frequently and are probably present to an appreciable extent as asymptomatic infections, any method that can be used to determine the immunity status of an individual or of a group of persons to undulant fever will help either to confirm the diagnosis or to rule out infection with this group of organisms.

Our purpose in this discussion is not to point out either the sources of infection, modes of transmission or the clinical manifestations of Brucella infections but

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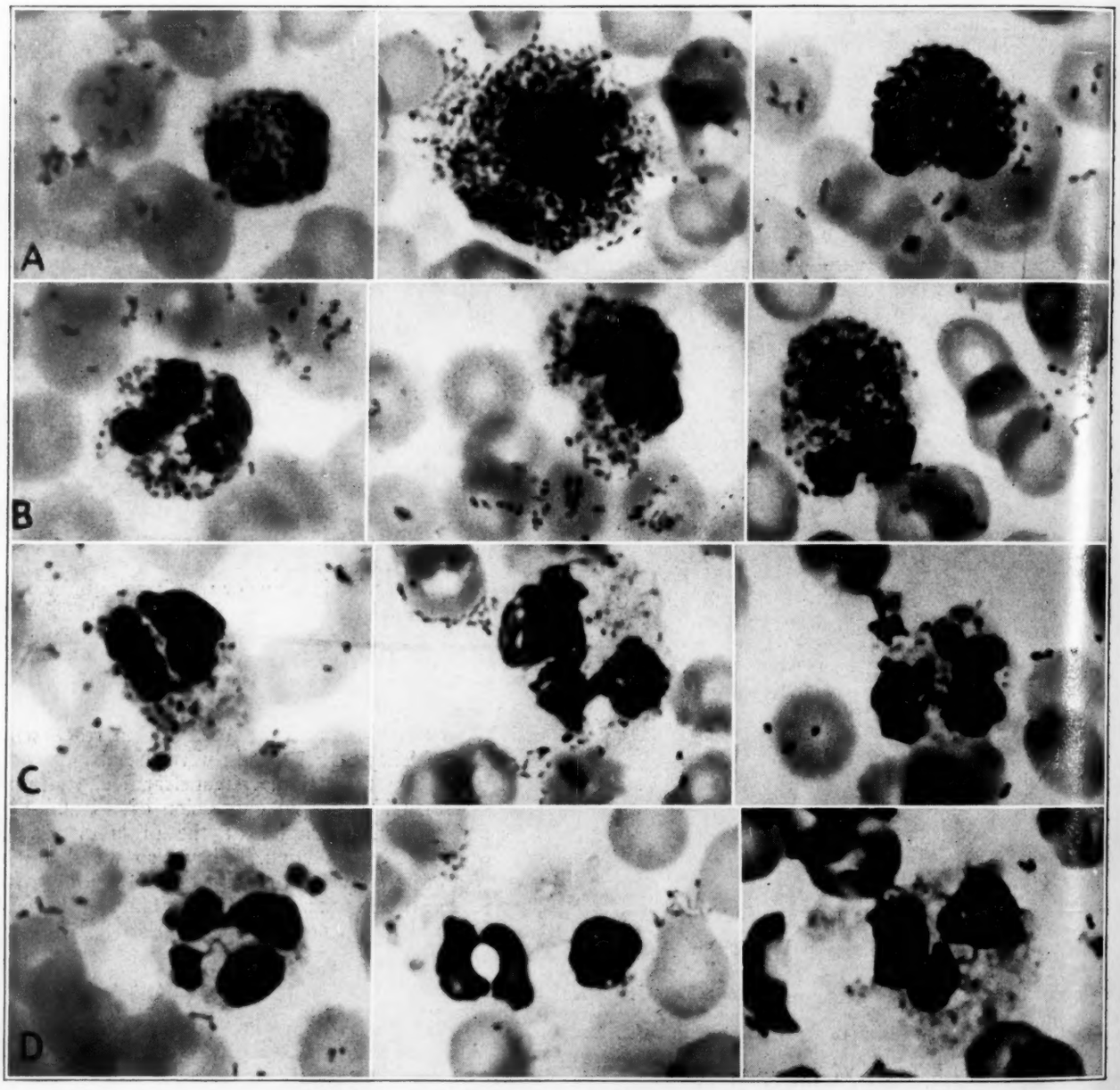
1. Huddleson, I. F.; Johnson, H. W., and Hamann, E. E.: A Study of the Opsono-Cytophagic Power of the Blood and Allergic Skin Reaction in Brucella Infection and Immunity in Man, Am. J. Pub. Health **23:** 917-929 (Sept.) 1933. Huddleson, I. F.: Brucella Infections in Animals and Man, Commonwealth Fund, 1934.

to evaluate the results obtained by means of the agglutination, allergic and opsonocytophagic tests on certain groups of individuals under varied conditions.

The technics for the skin test and the opsonocytophagic test employed in this investigation were those described by Huddleson, Johnson and Hamann. The material used for the skin test was supplied by Dr. I. Forest Huddleson and was the same that he employed in his own work. This material consists of a soluble nucleoprotein fraction of the three species of Brucella in 1 : 1,000 dilution in slightly alkaline physiologic solution of sodium chloride. In the performance of the test, 0.1 cc. of the solution is injected intracutaneously. The allergic test should be read forty-eight hours after the injection is made in order to allow nonspecific or pseudopositive reactions to subside.

A positive skin reaction depends on the occurrence of edema of varying degree at the site of injection. There is usually erythema associated with the swelling, but erythema without edema should not be considered as a positive reaction. There may be a small area of infiltration following the injection, which should be interpreted as a nonspecific reaction. In certain individuals who are markedly hypersensitive to the Brucella protein, the positive skin reaction may be associated with fever, general malaise and chilly sensations, symptoms of which the patient described as being similar to those which were present when he had active clinical manifestations of the disease.



Various degrees of phagocytosis of Brucella: *A*, marked; *B*, moderate; *C*, slight; *D*, negative.

It was found by Huddleson and his associates that in the blood of normal individuals the polymorphonuclear leukocytes showed phagocytic activity. These investigators also found that by the addition of sodium citrate in varied amounts to whole blood phagocytosis could be inhibited, retarded or unaffected and that a concentration of sodium citrate of 0.8 per cent is satisfactory for differentiating the phagocytic activity of individuals who may be susceptible to, infected with or immune to Brucella.

In the performance of the opsonocytophagic test, the bacterial suspension should be fresh and contain a sufficient number of organisms. In our experience a con-

centration of not less than six billion Brucella per cubic centimeter is necessary. Owing to the small size of Brucella organisms it is necessary to differentiate between the normal granulations found in polymorphonuclear leukocytes and the phagocytized bacteria. The strain of Brucella used for our suspensions was Brucella abortus, strain 456, supplied to the State Health Department Division of Laboratories by the National Institute of Health.

TABLE 1.—*Classification of Phagocytosis Used by Huddleson, Johnson and Hamann to Determine Opsonocytophagic Activity of Blood*

Classification	Number of Bacteria per Polymorphonuclear Leukocyte
1. Negative	None
2. Slight	1 to 20
3. Moderate	21 to 40
4. Marked	41 or more

TABLE 2.—*The Diagnosis of Undulant Fever According to Results of the Agglutination, Allergic and Opsonocytophagic Tests, Rearranged from Huddleson, Johnson and Hamann*

Agglutination Test	Allergic Skin Test	Opsonocytophagic Power of Blood	Status Toward Brucella
—	—	Cells negative to 20 per cent slight phagocytosis	Susceptible
—	+	Cells negative to 40 per cent marked phagocytosis	Infected
+	+	Cells negative to 40 per cent marked phagocytosis	Infected
—	+	Cells 60 to 100 per cent marked phagocytosis	Immune
+	+	Cells 60 to 100 per cent marked phagocytosis	Immune

TABLE 3.—*Results of Skin, Opsonocytophagic and Agglutination Tests on Four Patients with Undulant Fever*

Patient	Skin Test	Local Skin Reaction	General Reaction	Opsonocytophagic Test*				Agglutination Test	Onset of Illness
				Ma.	Mo.	S.	N.		
1	Positive	Marked	Marked	16	9	0	0	1:160	4 months
2	Positive	Marked	None	25	0	0	0	Neg.	15 months
3	Positive	Moderate	None	16	6	3	0	1:80	4-6 weeks
4	Positive	Moderate	Slight	11	12	3	0	1:20	Chronic relapsing type 17 mo.

* Ma., marked phagocytosis; Mo., moderate phagocytosis; S., slight phagocytosis; N., no phagocytosis.

The term "opsonocytophagic" was used by Glynn and Cox [2] in 1910 to indicate the phagocytic activity of blood in the presence of serum opsonins and homologous leukocytes. To perform the opsonocytophagic test, 5 cc. of venous blood is obtained. This is placed in a tube containing 0.2 cc. of 20 per cent sodium citrate in physiologic solution of sodium chloride. The final dilution of sodium citrate is 0.8 per cent, which according to Huddleson, Johnson and Hamann has two purposes: to prevent clotting of the blood and to inhibit the Brucella opsonins, which may be present in the serum of normal individuals. The test consists of mixing 0.1 cc. of the patient's citrated blood with an equal quantity of a live twenty-four hour saline suspension of Brucella organisms. This mixture is shaken and then incubated at 37 C. for thirty minutes, after which the tube is shaken again and a small amount of the mixture withdrawn and placed on a clean slide. A smear is made and stained with Hasting's blood stain. Twenty-five polymorphonuclear neutrophilic leukocytes are then examined and the degree of phagocytosis is recorded for each cell according to the classification given in table 1.

In uninfected or normal individuals it is not unusual to find some of the polymorphonuclear neutrophils showing slight phagocytosis. As many as ten or fifteen of the twenty-five cells examined may show this degree of phagocytosis and there also may be an occasional cell showing a moderate or marked degree of phagocytosis. The accompanying illustration shows photomicrographs of polymorphonuclear neutrophilic leukocytes with slight, moderate and marked phagocytosis, and also cells without phagocytosis.

To determine the status of individuals with regard to infection with Brucella, Huddleson has proposed the system given in table 2.

The present investigation was conducted to determine the accuracy and specificity of these tests under certain conditions; namely, (1) in patients in the active stage or who have recovered from undulant fever, (2) in individuals exposed either through drinking infected cow's milk or through routine laboratory work, and (3) in patients with other diseases. In the first group there were four patients, two of whom were considered to be in the active stage of the disease or in the stage of recovery. The other two patients had been afebrile from six to fifteen months before the tests were conducted. The second group consists of twenty-nine patients with positive skin tests among a group of 576 persons. Of this number 560 were in an institution in Tennessee which, owing to a breakdown in the pasteurization plant, were served raw milk for approximately one month. This milk was obtained from a herd of 127 cows, of which 44 per cent were found to have positive agglutination tests for Bang's disease. The remaining sixteen in this group were technicians performing routine laboratory procedures. The third group consists of forty-four patients with other diseases in the wards of the Vanderbilt University Hospital. A skin test, an opsonocytophagic reaction and an agglutination test were performed on each individual in these three groups.

TABLE 4.—*Results of Agglutination, Skin and Opsonocytophagic Tests on Twenty-Nine Persons*

Case	Agglutination Test	Skin Test	Local Skin Reaction	General Reaction	Opsonocytophagic Test			
					Ma.	Mo.	S.	N.
1	1:20	Positive	Moderate	Marked	13	7	5	0
2	—	Positive	Marked	Marked	21	4	0	0
3	—	Positive	Moderate	—	17	7	1	0
4	—	Positive	Marked	—	23	2	0	0
5	—	Positive	Moderate	—	25	0	0	0
6	—	Positive	Moderate	—	23	2	0	0
7	—	Positive	Moderate	—	14	6	3	0
8	—	Positive	—	—	21	3	1	0
9	—	Positive	Slight	—	20	5	0	0
10	—	Positive	Slight	—	18	7	0	0
11	1:160	Positive	Moderate	Moderate	2	20	1	2
12	—	Positive	Marked	—	1	4	14	6
13	—	Positive	Moderate	—	3	6	9	7
14	—	Positive	Slight	—	4	10	8	3
15	—	Positive	Moderate	—	1	4	10	10
16	—	Positive	Marked	—	2	5	6	12
17	—	Positive	Moderate	—	3	7	12	3
18	—	Positive	Moderate	—	8	9	8	0
19	—	Positive	Slight	—	5	6	6	8
20	1:80	Positive	Marked	—	6	9	4	6
21	—	Positive	Marked	—	0	2	20	3
22	—	Positive	Moderate	—	1	3	18	3
23	—	Positive	Moderate	Moderate	0	0	6	19
24	—	Positive	Moderate	—	0	0	7	18
25	—	Positive	Moderate	—	2	2	7	14
26	—	Positive	Slight	—	0	0	6	19
27	—	Positive	Slight	—	0	0	5	20
28	—	Positive	Marked	Marked	0	0	0	25
29	—	Positive	Marked	Marked	0	0	0	25

2. Glynn, E. E., and Cox, G. L.: Variations in the Inherent Phagocytic Power of Leukocytes, J. Path. & Bact. **14**: 90-131, 1910.

Table 3 shows the results in patients who had either recovered from undulant fever or who were showing symptoms. The results indicated in the table are those obtained at the time the tests were performed. In patient 1 the diagnosis of undulant fever was based on a positive agglutination test (1:640) four months previously. In patient 2 the agglutination test was positive (1:640) fifteen months before the present tests. The diagnosis in patient 3 was based on a positive agglutination test (1:80) and suggestive clinical history. It was afterward found that this patient had a positive skin test and an opsonocytophagic test which showed marked phagocytosis in 60 per cent of the polymorphonuclear leukocytes examined. The diagnosis in patient 4 was based on a history of recurring attacks of fever over a period of seventeen months. A diagnosis of undulant fever was made by her physician.

It will be seen from this table that all the patients who had had undulant fever or who were in the active stage of the disease exhibited positive skin tests. Following the skin test, two of the four patients (1 and 4) developed constitutional symptoms, such as increase in temperature, chilly sensations and general malaise. In three of these patients (1, 2 and 3) 60 per cent or more of the twenty-five polymorphonuclear leukocytes examined showed marked phagocytosis, which would indicate immunity. There has been no recurrence of symptoms in any of these patients since recovery from the original attack, except in patient 4, and in this instance the opsonocytophagic picture was indicative of an active infection. This patient was having an exacerbation of undulant fever at the time the tests were made and had been ill periodically for approximately seventeen months. The agglutination reactions performed at the same time at which the other tests were done showed titers varying from 1:20 to 1:160 in three of the four patients.

In the second group examined there were 576 individuals who were not ill but who were living or working under conditions favorable for infection with Brucella. In 547 persons in this group the agglutination reactions and skin tests were negative. All the opsonocytophagic tests in these 547 persons showed phagocytosis in no greater degree than would be found in the blood of normal or uninfected individuals.

In the remaining twenty-nine persons in this group, positive skin tests were found. In all skin tests the area of edema was measured in two diameters at right angles to each other. The skin reactions varied in size from 2.4 to 3.6 cm. in one diameter and from 3.6 to 9.8 cm. in the other diameter. Following the skin test four persons developed a marked systemic reaction and two developed a moderate systemic reaction. All these skin reactions cleared up rapidly and in no instance was ulceration noted. Twenty-seven of the twenty-nine individuals in this group were retested and in each case the results of the opsonocytophagic, skin and agglutination reactions were in agreement with the original tests.

In three of the twenty-nine persons with positive skin tests the agglutination titers varied from 1:20 to 1:160.

The results of the opsonocytophagic tests, according to the interpretation of Huddleson et al., showed that in ten of the twenty-nine patients 60 per cent or more of the polymorphonuclear leukocytes examined showed marked phagocytosis, indicating immunity to Brucella. Of the remaining patients in this group twelve had opsonocytophagic tests in which a majority of the leukocytes examined showed phagocytosis of varying

TABLE 5.—*Results of Agglutination, Skin and Opsonocytophagic Tests on Forty-Four Patients with Diseases Diagnosed as Other than Undulant Fever*

Case	Sex	Age	Color	Temperature at Time of Test	Duration of Fever	Agglutination Test	Skin Test	Opsonocytophagic Test				Diagnosis
								Ma.	Mo.	S.	N.	
1	♀	32	W	100.0	2 wks.	1:80	P	20	3	2	0	Bronchopneumonia (?), undulant fever
2	♂	7	W	103.0	.....	N	N	0	0	0	25	Typhoid fever
3	♀	5	W	102.5	.....	N	N	0	0	0	25	Typhoid fever
4	♀	3	N	Normal	.....	N	N	0	0	1	24	Typhoid fever
5	♂	25	W	102.0	.....	N	N	0	0	0	25	Typhoid fever
6	♀	25	W	102.0	3 wks.	N	N	0	0	2	23	Paratyphoid fever
7	♂	35	W	Normal	.....	N	N	0	0	0	25	Recovered tularemia
8	♂	35	N	Normal	.....	N	N	0	0	0	25	Recovered tularemia
9	♂	59	W	99.0	2 wks.	N	N	0	0	1	24	Diabetes
10	♂	49	W	101.0	.....	N	N	0	0	2	23	Diabetes
11	♂	14	W	100.5	1½ wks.	N	N	0	0	1	24	Tuberculous meningitis
12	♂	12	W	99.6	6 wks.	N	N	0	0	1	24	Tuberculosis of lungs and bone
13	♀	65	W	99.6	12 mos.	N	N	0	0	0	25	Cholecystitis, cholelithiasis
14	♂	26	W	102.0	2 wks.	N	N	0	0	3	22	Rheumatic fever
15	♂	23	W	100.5	8½ wks.	N	N	0	0	9	16	Lung abscess
16	♂	10	W	105.0	6 days	N	N	0	0	2	23	Lobar pneumonia
17	♂	29	N	101.4	3½ wks.	N	N	0	0	1	24	Syphilitic aortitis
18	♂	35	N	Normal	.....	N	N	0	0	1	24	Syphilis, gonorrhea, tuberculosis
19	♀	76	W	100.0	.....	N	N	0	0	9	16	Cardiovascular disease
20	♂	8	W	101.0	.....	N	N	0	0	0	25	Infectious arthritis
21	♂	10	N	Normal	.....	N	N	0	0	2	23	Rheumatoid arthritis
22	♂	10	W	101.0	.....	N	N	0	0	0	25	Nephrosis
23	♀	42	W	101.5	.....	N	N	0	0	0	25	Hydronephrosis
24	♂	27	W	101.6	2½ wks.	N	N	0	0	2	23	Chronic nephritis
25	♀	32	W	101.0	.....	N	N	0	0	4	21	Ulceration of the vulva
26	♂	5	N	102.0	3 wks.	N	N	0	0	1	24	Rhinopharyngitis
27	♀	9	W	101.6	6 wks.	N	N	0	0	0	25	Osteomyelitis
28	♀	17	W	103.0	.....	N	N	0	0	0	25	Fracture of the nose
29	♂	33	N	Normal	.....	N	N	0	0	0	25	Appendicitis
30	♂	23	W	Normal	.....	N	N	0	0	0	25	Subdural hematoma
31	♂	13	W	100.0	.....	N	N	0	0	4	21	Hernia
32	♀	46	W	Normal	.....	N	N	0	0	4	21	Hernia
33	♀	16	W	99.6	.....	N	N	0	2	4	19	Scoliosis
34	♀	60	N	99.6	.....	N	N	0	0	0	25	Carcinoma of breast
35	♂	48	W	99.3	1 wk.	N	N	0	0	3	22	Hydrocele
36	♂	22	W	101.0	.....	N	N	0	0	0	25	Infected wound
37	♂	33	W	Normal	.....	N	N	0	0	0	25	Renal calculi
38	♂	70	W	Normal	.....	N	N	0	0	0	25	Carcinoma of the skin
39	♂	49	W	Normal	.....	N	N	0	0	3	22	Colles fracture
40	♀	26	W	100.5	.....	N	N	0	0	0	25	Pyrexia of unknown origin
41	♂	28	N	104.0	6 days	N	N	0	0	7	18	Malaria
42	♀	8	W	103.5	8 days	N	N	0	0	0	25	Pyrexia of unknown origin
43	♀	40	W	Normal	.....	1:20	N	0	1	13	11	Bronchitis
44	♀	35	W	100.0	.....	1:40	N	0	0	10	15	Pellagra

degrees, which would indicate either infection or a developing immunity to Brucella. The seven other patients in this group had opsonocytophagic tests in which no phagocytosis could be seen in a majority of the polymorphonuclear leukocytes examined, indicating infection but no immunity to Brucella. Table 4 shows the results of these tests.

To determine the specificity of these tests, forty-four patients suffering from a wide variety of diseases were tested in a similar manner as the individuals in the other groups. Most of the patients in this group were febrile at the time of testing. Table 5 shows the results.

There was a complete correlation in the results of the three tests in forty-two of the forty-four patients tested in this group. In forty-one of these patients the three tests were negative. Patient 1 was admitted to the hospital with a questionable diagnosis of bronchopneumonia. The pulmonary signs cleared up but fever persisted. The Brucella skin test was found to be positive, after which positive agglutination and opsonocytophagic tests were obtained. This patient made an uneventful recovery. Four weeks after she was discharged from the hospital another agglutination reaction in a titer of 1:160 was obtained. The opsonocytophagic test was also repeated and all the polymorphonuclear leukocytes examined showed marked phagocytosis.

In two patients in this group the agglutination reactions showed titers of 1:20 and 1:40, which were not considered diagnostically significant. One of the patients (1:40) had pellagra and had been having fever of undetermined origin for several weeks. The other patient was afebrile and had had bronchitis. These observations may have been accidental or the agglutination reactions may have resulted from infection with Brucella, in which case there was no complete agreement of the various tests. In these two cases the skin tests were negative.

COMMENT

The data presented agree with those reported by Huddleson and his associates for individuals who are either in the active stage of undulant fever or who have recovered from Brucella infections and in persons who are living or working under conditions of exposure to this group of organisms.

The results of the intracutaneous and the opsonocytophagic tests in a group of forty-four patients with a wide variety of febrile and nonfebrile conditions indicate that the tests are probably specific for Brucella infections. In one patient in this series a diagnosis of undulant fever was made by means of these tests. In all but two patients, who had agglutination titers of 1:20 and 1:40, these tests were negative.

In evaluating the three tests as to their usefulness in the diagnosis of undulant fever, the results obtained indicate that the agglutination test is most dependable in patients who are in the active stage of the disease or who have recently recovered. In individuals who have been infected with Brucella the agglutination test may or may not be positive. Under these conditions, results obtained from the examination of serums from groups of individuals to determine the incidence of undulant fever would not be reliable. It is also possible that in patients suffering from other diseases a low titer agglutination may be obtained which may be suggestive of infection with Brucella but which is not diagnostically significant.

The intracutaneous test is probably the most dependable procedure in determining an allergic state resulting from Brucella infection. It was positive in each of the four patients with undulant fever and in twenty-nine, or 5 per cent, of 576 persons living or working under conditions favorable to infection with Brucella, while only one of the forty-four patients diagnosed originally as having conditions other than undulant fever showed a positive skin test. The intracutaneous test indicates a state of allergy resulting from infection with Brucella and may be used as an epidemiologic procedure to determine the incidence of Brucella infection. A positive skin test may indicate infection or may be found in an individual who has been infected but who has developed an immunity to Brucella.

To determine the immunity status of individuals, the opsonocytophagic test may be employed in conjunction with the intracutaneous test. The absence of marked phagocytic activity of the polymorphonuclear leukocytes in a patient with a positive skin test indicates infection and a lack of immunity. The presence of marked phagocytic activity would indicate either a developing or an established immunity. If marked phagocytic activity and a positive skin test are demonstrated in a patient with fever, it is likely that the fever is due to some disease other than undulant fever. These tests, therefore, may be used as valuable aids in differential diagnosis.

CONCLUSIONS

The results of these observations indicate that the intracutaneous test may be used to determine a state of allergy resulting from Brucella infection. This test alone may be useful in determining the presence of infection with Brucella in individual patients or the incidence of this infection in groups of the population. However, it gives no indication of the immunity status of the patient. This may be determined by means of the opsonocytophagic test. It is possible with the use of these two tests to determine whether individuals are susceptible, infected or immune with regard to undulant fever.

This discussion presents our experience up to the present time with these procedures. Further studies are planned in order to confirm the observations represented in the data covered in this paper.

ABSTRACT OF DISCUSSION

DR. W. S. LEATHERS, Nashville, Tenn.: The prevalence of undulant fever in the United States is of importance especially from the standpoint of the usually prolonged attack and the marked debilitating effect on the patient. This disease is not at present a major public health problem as related to the human being, although it is exceedingly important from a medical as well as from a preventive point of view. The average duration of an attack of undulant fever is about four months. However, there may be several recrudescences. The fever may recur at long intervals over a period from one to two years. Only 2 to 3 per cent of the patients die. It is also of interest to note that it occurs much more frequently among males than among females. The ratio is about two to one. The principal reason why undulant fever is not more prevalent is the low infectivity or degree of susceptibility of the population. Obviously an immunity has been established as a result of individuals obtaining small doses of infection, chiefly through milk. Moreover, the strain Brucella probably does not multiply in milk; therefore if the milk from one cow is infected and is mixed with a large quantity of milk for distribution to a community the dosage becomes diluted and as a consequence serves only to stimulate immunity in the individual who drinks the milk. Dr. Keller and his associates have presented a discussion with particular reference to the accuracy and specificity of the agglutination, allergic and opsonocytophagic reactions as procedures which may be effectively applied in differential diagnosis and in the epidemiologic study of this disease in the

individual and in groups of the population. The agglutination reaction is of particular value in the diagnosis of undulant fever in the acute stage. Although the blood culture is also of great importance as a confirmatory procedure, the agglutination reaction cannot be used to determine the incidence of infection in groups of the population, owing to difficulties involved in culturing the organism. It is, however, of much value in locating the infection among cows. It has also been pointed out that this test cannot be used to determine the immunity status of the individual. The allergic reaction, or skin test, is of particular importance to determine this infection in an individual, in the study of immunity and especially in clearing up obscure cases of the disease. The opsonocytophagic reaction is conclusive in determining the immunity status of a person. The degree of immunity in an individual may be indicated roughly by the number of phagocytized bacteria by the polymorphonuclear leukocytes. The authors have shown the relative clinical and public health value of these tests, and the facts presented apparently confirm the work that has been done by Huddleson and his associates. It has been shown in this investigation that the allergic reaction of undulant fever does not occur in other diseases; therefore this fact makes this test more valuable as a diagnostic procedure.

DR. J. N. BAKER, Montgomery, Ala.: The diagnosis of undulant fever is often most difficult. In many cases the symptomatology either is indefinite or may resemble that of other diseases. Recently in Montgomery there was a series of cases in which the chief complaint was a severe pain in the lower right quadrant. Before the true nature of the disease was recognized, surgical intervention was practiced in one case (appendix operation). More careful and extended examination revealed that all the patients were suffering from undulant fever. The agglutination test, because of its ease in performance and its specificity, has been the reaction of choice in most laboratories. Here the matter of technic, which involves the choice of strain to be used, the preparation of the antigen, the time of incubation and other details, are of extreme importance. The question of the proper titer to be obtained before a positive diagnosis can be made is a perplexing one. Some workers think that any case showing a titer of 1:80 or above should be considered positive, while others assert that titers of less than 1:500 have little or no significance. On the other hand, by cultural methods it has been shown that certain patients may have the disease and yet never exhibit a titer over 1:15 or 1:30; furthermore, when the results of any agglutination test are considered, the question of past or present infection becomes paramount. Carpenter and Boak (1930) are of the opinion that the agglutinins usually remain for a long time; hence, in the interpretation of positive agglutination reports, the persistence of reacting bodies from a previous infection must always be considered. The blood culture method, besides its inherent technical difficulties, takes too long for an ordinary diagnostic or public health procedure. The same criticism applies to the culture of urine and feces from suspected patients. The intracutaneous test has been used with success by Giordano (1929) and others. In 1934 Huddleson reported a more refined antigen designed to eliminate a certain percentage of the nonspecific reactions; nevertheless, if the test is to be used alone, the following statement of Keller and his colleagues must be borne in mind: "The intracutaneous test indicates a state of allergy resulting from infection with Brucella. A positive skin test may indicate infection or may be found in an individual who has been infected but who has developed an immunity to Brucella." In 1933 Huddleson and his associates developed the opsonocytophagic test, which is really a modification of the old opsonic index test. They recommended its use in conjunction with the skin reaction and stated that valuable information as to the status of the patient could be obtained if the results were properly interpreted. Also the agglutination test was employed. The results of Keller and his associates corroborated those of Huddleson and his co-workers. They indicate the specificity of the combined tests, intracutaneous and opsonocytophagic, in individuals who have, or have had, undulant fever, and the lack of response in those who have other febrile conditions.

DR. JOHN B. YOUMANS, Nashville, Tenn.: These procedures have been a great help in our clinic since they were introduced there by Dr. Keller. In the past we have felt that some cases of undulant fever were being missed because of the unreliability of the agglutination test, which sometimes has been negative even in the presence of positive cultures. We have been particularly concerned about mild or chronic cases with positive agglutination tests of such low titer that their significance was questionable. With these newer procedures we have been able to use the skin test extensively as a screen, quickly detecting those with evidence of the disease, past or present, and determining the presence of active disease by means of the opsonocytophagic test. By this means the use of the more difficult cytophagic test may be confined to those cases in which there is a likelihood of active infection. I would, however, stress the danger of mistaking a pseudoreaction for a positive skin test. We have had a number of patients with sharp local reactions in twenty-four hours which had cleared completely on the second day. The true reaction is present, even maximum, in forty-eight hours, and unless precautions are taken to follow this criterion, many mistakes will be made. This is the more important because the skin test is the crucial test in distinguishing between noninfected (susceptible) and the infected (nonimmune) groups. In using the combined results of the agglutination, skin and opsonocytophagic tests in individual cases, it must be appreciated that the criteria are not absolute and that borderline stages between susceptible and infected, and between infected and immune, must occur. It is in connection with the former that the skin test is so important. As always, such tests must be interpreted in the light of all the clinical observations; nevertheless, these tests are a great help in the diagnosis of an important but often illusive disease.

THE PARADOXICAL BEHAVIOR OF THE WASSERMANN TEST IN LATENT SYPHILIS

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It is well known that, in early syphilis, treatment by any of the modern intensive methods reverses the Wassermann test from positive to negative in a period of about three months in approximately 85 per cent of the cases and that, in the majority of instances, continued treatment by an intensive method insures a continued negative serologic reaction. This behavior of the Wassermann test under treatment in early syphilis is so consistent that it can serve as an experimental criterion of the efficacy of any plan of therapy. By the same token it may be stated that in a given case of syphilis, if the Wassermann test is reversed promptly under therapy and remains negative, the patient is probably suffering from early syphilis. This is so in at least 85 per cent of the cases. This behavior of the Wassermann test, however, does not hold true in the case of latent syphilis. Those experienced in the treatment of large numbers of syphilitic patients are, indeed, well aware of the vacillating character of the Wassermann test in latent syphilis, but the general practitioner is not so informed and is frequently chagrined by the failure of the Wassermann test to exhibit results identical to those observed in early syphilis.

To examine this phase of the subject and to examine the behavior of the Wassermann test in latent syphilis, a series of 500 consecutive case records was studied. By far the majority of these patients was treated by the chronic intermittent type of therapy (Neisser) which, as is known, includes the use of arsphenamine and mercury or bismuth compounds given alternately in courses. No case was evaluated unless the patient

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had had at least two years of treatment; most, however, were under treatment and observation for much longer periods, some ten years or more. The amount of treatment that was administered necessarily varied with the time the patients were under care. As is well known, the chronic intermittent method includes short periods of rest between courses of treatment, and accordingly our patients had varying rest periods, but in addition there were many instances of unauthorized absences on the part of the patients. The analysis, so far as the behavior of the Wassermann test is concerned, reveals that the cases fall into three groups:

(*a*) Those in which the Wassermann test was reversed and remained so during the entire period of treatment and observation.

(*b*) Those in which the Wassermann test remained persistently and consistently positive (two plus or over); in other words, so-called Wassermann fast cases.

(*c*) Those in which the Wassermann test fluctuated while under treatment at will from various grades of positive to negative or the reverse without apparent relation to the amount and frequency of treatment or rest periods.

It is this paradoxical behavior of the serologic test in this type of case (*c*) that forms the particular object of this presentation.

While the last mentioned fact must be known to the syphilologist, it was surprising to note its strikingly high incidence. For this reason alone, it merits wider publicity, particularly among those who treat syphilis only occasionally. It is necessary to emphasize that in this presentation we are concerned chiefly with calling attention to the peculiar and totally unpredictable behavior of the Wassermann test in latent syphilis under treatment or observation.

The serologic tests in all the cases were done in a single laboratory and by a constant technic, and accordingly their evaluation is on the same basis.

SUMMARY OF ANALYSIS

1. In a series of 500 patients with latent syphilis, the Wassermann test was reversed to negative in approximately 10 per cent, remained persistently positive (Wassermann fast) in 23 per cent, and showed a paradoxical behavior in 67 per cent. These patients were treated by the chronic intermittent method (Neisser). It is possible that treatment by the continuous method as outlined by the Cooperative Clinic Group would yield better results; such a study is now in progress.

2. In latent syphilis, while the Wassermann test following treatment is frequently reduced in its positivity or even reversed to negative, almost as frequently it remains uninfluenced by treatment or is found to be of a higher degree of positivity after treatment than before.

3. During rest periods, authorized or unauthorized, the Wassermann test often fluctuates without any apparent reason.

4. In a considerable number of patients the Wassermann test, negative at the beginning of treatment, unexpectedly becomes two plus or over at the end of treatment; this unusual behavior cannot be looked on as a provocative test, since these were syphilitic patients, with many positive Wassermann tests just prior to the paradoxical reversal.

5. Even when large amounts of treatment were given, the Wassermann test fluctuated between negative and positive, almost at will.

6. In a number of patients it was observed that at the outset of a course of treatment the Wassermann test was positive, remained positive at the completion of the course, and after a rest interval of weeks or months would suddenly become negative.

7. In a number of patients in whom treatment was discontinued, for one reason or another, but subjected to repeated Wassermann tests subsequently, the test again showed paradoxical behavior, progressing from positive to negative unexpectedly.

CONCLUSIONS

1. The behavior of the Wassermann test in latent syphilis under therapy cannot be predicted with any degree of certainty in a given patient.

2. The Wassermann test in latent syphilis is an unreliable guide to therapy.

3. As a corollary, one should treat the patient and not the serologic reaction.

4. The physician should be cognizant of this paradoxical behavior of the Wassermann test in latent syphilis and should utilize this knowledge in discussing treatment and prognosis with the patient.

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SCHISTOSOMIASIS

REPORT OF TWO CASES

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Schistosomiasis is usually classified as a tropical disease, but while it is true that the condition is unusual in the United States a case is encountered occasionally. Although the literature on this disease in the United States is scarce, there have undoubtedly been cases occurring in foreigners from the tropics which have been overlooked, owing to lack of specific information.

Briefly, there are three types of schistosomiasis—Schistosoma mansoni, S. haematobium and S. japonicum—which occur in various tropical countries. The infestation takes place through intermediary hosts, various species of fresh water snails which have become infested with the ova from the excreta of patients suffering with the disease. After a stage of development in the snails the infected larvae or cercariae enter the patient by penetration of the skin. The infestation must therefore take place either through the patient's bathing in infested waters or, in rare cases, through the swallowing of the cercariae, which penetrate the mucous membrane. The early symptoms consist of a skin eruption. Later symptoms may arise, varying according to the specific localization of the parasites in the bladder veins (S. haematobium) or in the rectal veins (S. mansoni and S. japonicum). Cystitis or mucosanguineous diarrhea occur at this stage; later the parasites and their ova find their way to the liver and mesentery and may cause a very severe liver cirrhosis, with splenomegaly. The latter, and usually fatal, stage may often be prevented if the diagnosis is made in the early stages of the infestation and treatment immediately instituted.

The presence of schistosomiasis may be especially suspected in cities of both coasts of the United States, where shipping from all parts of the world is the means of importing the disease. As far as is known at present, the snails that serve as specific intermediate hosts for the various schistosomes are not found in the United States. The public health aspects of the disease may therefore safely be ignored in this country,

From the First Medical Division, Bellevue Hospital.

as the spread of the malady is impossible where the intermediate host is absent. The importance of the recognition of the disease lies in the fact that the introduction of the specific treatment has resulted in the complete cure of many cases, and that, if untreated, the condition progresses to the stage of liver cirrhosis and various other frequently fatal complications. Cutler [1] reports a case of urinary schistosomiasis in 1926 and reviews the literature up to that time. According to him, twenty-two cases have been reported in the United States up to 1926. In addition to these cases, two S. japonicum infestations were reported by Bovaird and Cecil.[2] One of these is the only case reported in the United States in which autopsy studies were included. In Bellevue Hospital the records of the four medical divisions show that there have been but five cases of schistosomiasis since 1913. Most of them were merely incidental manifestations in patients suffering from other conditions. The patients were discharged after a short period of hospitalization. Only two of these cases were treated with antimony and potassium tartrate until found to be egg free, since specific treatment for schistosomiasis was unknown until 1918. There were no deaths or serious complications among them during their hospital stay. All the cases reported in the literature as well as the Bellevue Hospital cases invariably occurred in foreigners of various nationalities who had lived in the United States for a comparatively short while. They include all the varieties of schistosomiasis, depending on the country from which the patient had emigrated.

The diagnosis of schistosomiasis rests mainly on the finding of specific ova in the stools or urine, as the case may be. The symptomatology must be carefully studied and usually provides a clue to the correct diagnosis. Recently, however, diagnosis has been materially aided by the elaboration of specific skin sensitization and complement fixation reactions.[3] The antigen for the skin test is derived from the livers of snails infested with schistosome cercariae. A filtered saline extract of the dried powdered livers is sometimes used; the intradermal test is easily made and the reaction consists of an urticarial wheal with pseudopodia and erythematous margins, which usually appears with a half hour.

A delayed type of reaction may also occur in from three to twenty-seven hours. The reaction is a group reaction for all types of schistosomes, as is the case in most of the parasitic skin tests. As there is a high percentage of positive reactions in known cases of schistosomiasis, the test is of great clinical value. The complement fixation test, in which the antigen is made from an alcoholic extract of infected snail livers or of adult schistosomes, has also been used by Fairley [4] mainly to determine the true end point of the disease, as the reaction has been found to exist several years after treatment and definitely indicates the presence of living schistosomes.

The prognosis of schistosomiasis varies with the type of infestation. In the haematobium variety the lesions are usually fairly well localized and a fatal outcome is rare. The mansoni and japonicum varieties, however, as has already been mentioned, progress to liver cirrhosis and usually to a fatal outcome due to hemorrhage from ruptured varices, as in the first case to be reported or to intercurrent infections, such as pneumonia, which are extremely common at this stage.

Up to the introduction of antimony and potassium tartrate for the treatment of schistosomiasis, no effective or specific remedy was available. Among the substances tried had been emetine, calcium chloride, thymol, arsphenamine and innumerable other drugs. None of these were found satisfactory and they have all been discarded. McDonagh first used intravenous antimony for schistosomiasis from 1911 to 1915, but the treatment did not begin to attract wide attention until he and Christopherson in 1918 definitely demonstrated its value.[3] Antimony and potassium tartrate was the remedy of choice until the introduction of fuadin (neo-antimosan) in 1929-1930. Antimony and potassium tartrate is injected intravenously, usually in a 1 per cent solution. It is often diluted with 60 cc. of physiologic solution of sodium chloride to lessen the irritative effects. A course of twelve injections is usually found sufficient to cause the disappearance of the schistosome ova. The dosage is usually one-half, 1 and 1½ grains (0.03 to 0.1 Gm.) on alternate days the first week, and 2 grains (0.13 Gm.) thereafter for two further weeks, given on alternate days. Extreme care is necessary during the administration of the drug, as leakage into the tissues is apt to cause extensive necrosis. Toxic symptoms that have been noted are cough, nausea, rheumatic pains, vomiting and collapse. Sudden death has occurred from time to time and has been ascribed to the toxic effects of the drug on the heart muscle. The treatment is effective in a large percentage of cases if it is vigorously pursued, and the effect on the ova can be checked by microscopic examination of the stool, when it will be found that they become shriveled and brownish (dead) and finally disappear altogether.[5]

Fuadin,[6] a trivalent sodium antimony compound, has been recently introduced. It has certain advantages over antimony and potassium tartrate and has been found to be fully as efficacious. The drug may be injected intramuscularly or intravenously, and the total of 40 cc. of a 7 per cent solution is usually administered as follows: first day 1.5 cc., second 3.5 cc., third 5 cc., fifth, seventh and ninth 5 cc. each, and eleventh, thirteenth and fifteenth 5 cc. each, a total of 40 cc. None of the toxic symptoms usually encountered in treatment with antimony and potassium tartrate are noted. A slight bradycardia, reduction of pulse by twelve beats at the most has been the only abnormal finding noted. There was only one death in the 2,041 cases reported by Khalil and Betache in 1930. Owing to its ease and safety of administration and the shorter time required for its effect, fuadin should be employed whenever obtainable.[7]

REPORT OF CASES

CASE 1.—*History.*—E. L., a French chef, aged 45, a native of Guadeloupe, French West Indies, admitted to the hospital, Aug. 7, 1933, complained of swelling of the abdomen of one month's duration.

The past history was negative except for the important fact of his having lived in an area well known as a focus of

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schistosomiasis and of his habit of frequent bathing in the fresh water streams of the island. He gave no history of skin irritation nor of any suspicious diarrhea, either during his stay in Guadeloupe or after his removal to New York six years before his present illness appeared. He had always been in perfect health except for one attack of grip. There was no history of a venereal infection and he was a moderate but never excessive drinker of rum. His present illness began July 2, when he noted progressive swelling of the abdomen and legs accompanied by weakness and loss of weight. He went to the City Hospital, where a paracentesis was done. This was repeated after five days, and he then left the hospital because of failure to improve and came to Bellevue Hospital.

Examination.—Physical examination showed that the patient had apparently lost some weight. There were many dilated vessels and angiomas on the skin. The pupils were equal and reacted. The conjunctivae were pale, and there was some sclerosis of the retinal vessels. There was no general glandular enlargement. The lungs showed some diminished breath sounds and a few crepitant râles at both bases. The heart was displaced upward and to the left but was otherwise normal. The abdomen was rounded and the flanks bulged. A fluid wave and shifting dulness were present. The spleen was felt as a large, firm mass occupying half of the left lateral part of the abdomen. The liver percussed and was felt three finger-breadths below the costal margin. Pitting edema of both lower extremities was present.

Laboratory tests: The blood Wassermann reaction was reported anticomplementary. A Kahn test was not done. The first blood count, August 9, showed: red blood cells 4,100,000, hemoglobin 80 per cent, white blood cells 6,500: polymorphonuclears 25 per cent, lymphocytes 24, eosinophils 50, basophils 1. The x-ray examination was essentially negative. The temperature was 98 F., pulse 60, respiration rate 18 and blood pressure 108 systolic, 76 diastolic. The urine and sputum were normal. Stool examination, September 1, disclosed the presence of the lateral spined ova of schistosoma mansoni. Proctoscopic examination was negative.

Course.—Ascites and edema continued. Paracentesis was performed ten times during his stay in the hospital, the fluid removed varying in amount from 5,500 to 10,000 cc. The course of his illness was mainly afebrile but was marked by several episodes in which the temperature rose to 103 F. This on one occasion was accompanied by swelling and redness of the right leg, which was diagnosed as erysipelas. The attack subsided in four days. The patient vomited a small amount of blood on one occasion, but otherwise the symptoms were those of the dyspnea and discomfort attendant on the ascites. Treatment was started September 11. A course of antimony and potassium tartrate was given as follows: One per cent solution was administered intravenously in doses of 0.5, 1, 5, 5 and 5 cc. on alternate days, followed by a final dose of 10 cc., a total of 26.5 cc. On several occasions the administration of antimony and potassium tartrate was followed by a violent attack of coughing, but no other ill effects were noted. At the end of this course of antimony and potassium tartrate the eosinophils were 38 per cent and a secondary anemia of red blood cells 3,700,000, hemoglobin 70 per cent had developed. Stools following this course of treatment showed a few disintegrated ova, and the patient was therefore started on a course of fuadin. This was administered intravenously in doses of 1.5, 3.2, 5, 5 and 5 cc., a total of 19.7 cc. No ill effects of any kind were noticed following the administration of fuadin. The eosinophils dropped to 18 per cent and the stools became free and remained free from S. mansoni ova. Owing to the ascites, which recurred at increasingly short intervals and necessitated repeated paracenteses, it was thought advisable to resort to operative measures in an effort to relieve the condition. Omentopexy and splenectomy were performed, December 28, under spinal anesthesia. However, the patient became very lethargic following the operation and finally lapsed into coma and died, December 31.

AUTOPSY REPORT

The primary anatomic diagnosis was atrophic cirrhosis of the liver.

The heart showed some coronary sclerosis and there was some atherosclerosis of the aorta.

The lungs showed congestion and edema, and there was evidence of acute purulent bronchiolitis.

When the abdomen was opened, 500 cc. of serosanguineous fluid was found in the peritoneal cavity. The stomach was dilated and showed hemorrhages and the intestine was distended. There were petechial hemorrhages in the colon. Ruptured esophageal varices were present. Microscopic sections showed infiltration of the mucosa and muscularis, with scattered groups of eosinophils. The subserosa showed interstitial collections of groups of lymphocytes and eosinophils. There was perivascular lymphocytic infiltration.

The kidneys were normal except for a small adenoma of the left kidney.

The left testicle was normal. The right one was absent.

The liver was shrunken and well up under the costal margin and adherent to the diaphragm. It weighed 1,500 Gm. The capsule was thick and dull. The surface was diffusely nodular, the nodules being firm and greenish. They were bounded by pinkish cords of stroma, the whole giving the liver a bright, variegated pink and green color. On section, the liver showed increased resistance to cutting. The cut surface was firm and presented a brownish, diffusely granular appearance. On microscopic section the parenchyma was divided into irregular masses by overgrowth of connective tissue stroma in which were proliferated bile ducts and scattered areas of lymphocytic infiltration. Some masses were lobulated with distinct central veins; others were irregular. The liver cells were hypertrophic. A section about a large branch of the portal vein showed areas of more dense fibrosis in which were deposited remnants of schistosome ova each about the size of a giant cell. There was very little tissue reaction about the ova. In one section there was a granuloma in the wall of the portal vein in which there was a large giant cell containing a well preserved ovum with a definite lateral spine. About this giant cell there was a lymphocytic and eosinophilic reaction. The vasa vasorum were dilated.

The spleen, which had been removed at operation, showed diffuse fibrosis. It showed considerable enlargement. There were several areas of calcification, which on section were a mottled yellowish gray. The section showed marked dilation of the endothelial sinuses. These sinuses were filled with red blood cells and many eosinophils. There were several scattered, moderately large areas of dense fibrosis in which there was evidence of interstitial hemorrhage, in and about which were scattered foreign body giant cells. The reticular stroma was thickened by connective tissue. The lymph follicles were hyperplastic. No schistosome ova were present.

The final diagnosis was: schistosomiasis, cirrhosis of the liver, chronic interstitial splenitis with eosinophilia, and chronic interstitial inflammation of the large intestine with eosinophilia.

CASE 2.—*History.*—R. R., a Puerto Rican youth, aged 19, was admitted to the hospital June 1, 1934, with an infection of the upper respiratory tract. His past and present history in no way suggested parasitic infestation, except for the fact that he had recently come from Puerto Rico and had frequently bathed in fresh water streams of the island. At no time had he had an attack of diarrhea. His present respiratory condition cleared up rapidly and it was only on stool examination that he was shown to be harboring Schistosoma mansoni. The stools showed characteristic S. mansoni ova as well as ova of hookworm and Trichiuris. The physical examination was entirely negative. The liver and spleen were not enlarged. The urine and Wassermann examinations were negative. The blood count showed hemoglobin 85 per cent, red blood cells 4,200,000, white blood cells 8,200, polymorphonuclears 67 per cent, lymphocytes 20 per cent, monocytes 1 per cent and eosinophils 12 per cent. Except for the eosinophilia there was nothing striking in the blood count.

Treatment.—A course of fuadin was begun, starting with 1.5 cc. intravenously, and was continued as in case 1 until 40 cc. had been given. The hookworm ova were eliminated by treatment with carbon tetrachloride following the completion of the fuadin course.

Course.—The stools became egg free early in the treatment and there were never any unpleasant reactions. The temperature ranged from 97 to 102 F. (infection of the respiratory tract). He was discharged, August 10, free from the parasites as well as the infection of the upper respiratory tract. The patient was followed for several months in the gastro-intestinal clinic and remained egg free and in excellent health. He was seen again recently (April 1936) and was in perfect health.

COMMENT

The first case well illustrates the unfortunate end results of either lack of treatment or equally ineffective belated treatment of schistosomiasis. The absence of the usual dysenteric symptoms in this patient evidently caused the condition to be overlooked for many years, for after the initial warning signals the existence of schistosomiasis may be entirely compatible with perfect health until damage to the liver initiates the secondary phase, that of cirrhosis. This patient's symptoms were entirely referable to his cirrhosis; however, the high eosinophilia and of course the finding of schistosome eggs in the stool pointed to the parasitic cause for his disease. Treatment was instituted, although it was realized that the case was a late one and the prognosis extremely unfavorable; but the finding of live schistosome eggs indicated that even greater damage was possible. This additional damage could at least be eliminated by treatment that results in removing the cause of further liver trauma. The use of antimony and potassium tartrate in this case was fairly satisfactory, but the persistence of schistosome eggs and the unpleasant reaction, i. e., severe coughing, that followed its administration on several occasions made fuadin the next choice. The fuadin was administered intravenously without the slightest discomfort or reaction, and the treatment was apparently efficacious, and no schistosome eggs were subsequently found.

The second case, in contrast to the first, was luckily in a very early stage of parasitic invasion, and there were no signs of liver involvement. This case illustrates the comparative ease with which the parasite is eliminated by specific treatment, and there is every reason to believe that this boy will remain egg free and will escape the fatal outcome that occurred in the first case.

Twenty-Sixth Street and First Avenue.

Clinical Notes, Suggestions and New Instruments

A METHOD FOR RESTORING THE BODY AFTER AUTOPSY

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In the course of modern medicine few things have contributed more materially to progress than postmortem examinations. They have provided physicians and surgeons with knowledge that could have been obtained in no other manner; by the layman, unfortunately, necropsy has been feared, not favored. So important have been the results of such investigations that it is essential to make every effort to secure permission for an autopsy from relatives.

Gruesome ideas fostered by hearsay and regrettable pseudoscientific publications have been largely responsible for the unwillingness of the public to grant authority to make postmortem examinations, even when the benefits to be derived from them are well outlined by the attending physician. The undertaker has often been equally opposed to granting permission. As a mortician, he makes it his business to protect his interests. He has objected to the condition of bodies when transferred to him by the pathologist, which has been such as to make satisfactory preparation difficult.

The duty and responsibility of preparing the body for viewing by relatives and friends lie with the undertaker. Certainly his professional reputation rests squarely on the results that he is able to achieve. His clients are frequently in the depths of emotional despair; he must fulfil his obligation and restore the body to a semblance of its lifetime appearance.

Although it must be admitted that embalmers who thoroughly understand the principles as well as the technic of embalming are able to prepare a body regardless of its condition on arriving at their table, many embalmers find themselves at a loss to restore a body properly when routine practices are made impossible by dissections at autopsy.

A well conducted postmortem examination, in which the pathologist restores the body to the best of his ability, should be welcomed by the undertaker in preference to beginning work on a body that has not been so examined. The undertaker is justified in opposing autopsies when bodies are returned to him with important arteries carelessly severed or wantonly destroyed. There is no necessity for such lack of care.

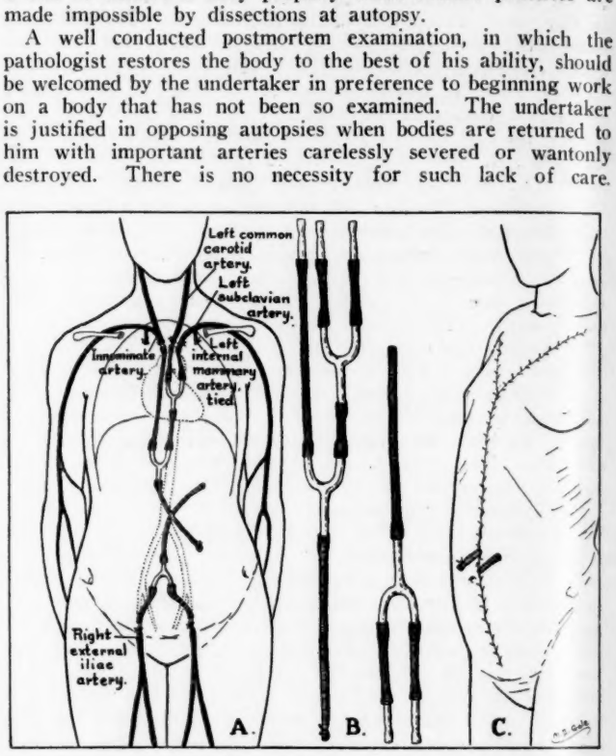

Diagram of glass and rubber tubing used by pathologist after autopsy in restoring body for undertaker.

Cooperation between pathologist and undertaker is necessary, then, if hospitals are to secure the desired permissions and if undertakers are to be able to restore bodies to the required standards after an autopsy has been performed.

In September 1933 this laboratory began experimenting with methods that would rid the undertaker of the greatest of postmortem cares, that of restoring the circulatory system. Methods of tying off arteries were unsatisfactory. There was always the chance of slipping or failure to tie a vessel. Contemporary with our efforts, Williams and Henderson [1] of the Taunton State Hospital began the use of glass cannulas in the aorta, from which rubber tubes were passed to the surface through the stitching of the restored body. This method offered the embalmer a direct entrance to the arterial system and enabled him to complete his work in a shorter period of time and with a maximum of certainty of results.

Our experiments on the restoration of bodies after autopsy established a technic which has been highly satisfactory. For some time an attempt was made to preserve the arch of the aorta, ligating it proximal and distal to the origins of the innominate, the left common carotid and the left subclavian arteries. By leaving this segment of the arch, circulation to the head and both upper extremities could theoretically be established by embalming in the usual manner into either axillary artery. This procedure, however, is not practical because of the difficulty encountered in securing leak-proof ligations of the aorta. There is the further disadvantage that the arch of the aorta cannot be examined, a procedure which should not be omitted.

The first use of the present method was in October 1933. By dividing from the aorta separately the three great vessels to the upper extremities and head, namely, the innominate, the left common carotid, and the left subclavian arteries, and tying into each a glass cannula of the proper size, it became possible by means of glass connecting U tubes and rubber tubing to establish access to these arteries by a single rubber tube extending through the incision of the restored body. The vessels

1. Williams, H. W., and Henderson, D. G.: Restoration of Autopsied Bodies, New England J. Med. **211**: 371 (Aug. 23) 1934.

to the lower extremities, namely, the external iliac arteries, were similarly canalized.

In the accompanying illustration *B* shows the two sets of tubing and *A* shows the tubes in place. The glass cannulas are made in the laboratory from glass tubing of varying diameters. Scrap glass tubing furnishes most of the supply. Experience with the method is the best guide to the sizes of tubes required by the exigencies of the case at hand. After insertion into the respective arteries the cannulas are secured by tying them with heavy cotton string. Fine string or twine will invariably cut through the arterial wall. It is customary for the knowledge of the undertaker to tie a simple knot in the tube leading from the head. The internal mammary arteries are also tied.

Should it be necessary to cut the carotid arteries when the neck is examined these can readily be canalized and attached to the tube system by a longer segment of rubber tube, or another U tube can be inserted, thereby making the circulatory system intact again.

After postmortem examination there is relatively little blood left in the body. What remains, however, is allowed to drain into the body cavity by not ligating the veins. This material is easily taken care of by the undertaker's cavity fluid.

The results in the first case were all that could be desired and the undertaker in charge was enthusiastic in his praise of this newer method of restoration. Since October 1933 more than 100 bodies have been so restored. Opposition from the undertaker has been replaced by an agreeable cooperation.

The objection has been raised that this method is expensive and caters unnecessarily to the desires of the undertaker. The expense is approximately 50 cents a body, which does not seem an exorbitant price for the object achieved.

With the undertaker's honest objections to autopsies removed by this method, there still remains one of the greatest problems, that of converting physicians to lead the way to obtaining permission for more postmortem examinations by example; that is, by granting permission for autopsies on their own relatives. Until this is accomplished, sincerity is lacking, no matter how much the scientific value of autopsies is praised.

1820 Highland Avenue.

THROMBOLYMPHANGITIS OF THORACIC DUCT

CASE PRESENTING ABDOMINAL SYMPTOMS NECESSITATING EXPLORATORY LAPAROTOMY

S. H. POLAYES, M.D., BROOKLYN

Thrombolymphangitis of the thoracic duct is rare. The current literature contains but little information on this subject and the textbooks contain less. Pappenheimer [1] refers to a total of ten cases in the English, French and German literature up to 1921, adding two cases of his own. Von Glahn,[2] in a similar review in 1924, describes another case and calls attention to a case reported by Warthin [3] and another by DeForest,[4] both of which, the author states, were omitted from Pappenheimer's collection. The rarity of this condition is again emphasized by Kryloff [5] and Wurm,[6] each of whom reports an additional single case. This makes a total of eighteen cases, including the present case report.

The absence of clinical signs and symptoms pointing to the existence of a thrombolymphangitis of the thoracic duct has been explained by the previous observers to be due to the deep course of the duct. All agree that it is most difficult to diagnose the condition clinically. That the disease may simulate closely an acute surgical condition in the abdomen has been illustrated in some of the previously reported cases as well as in the present case.

From the Department of Pathology, Cumberland Hospital.

1. Pappenheimer, P.: Ueber eitrige Entzündung des Ductus thoracicus, Virchows Arch. f. path. Anat. **231**: 274, 1921.
2. Von Glahn, W. C.: General Streptococcus Sepsis, Associated with Suppurative Inflammation of the Thoracic Duct: Report of Case, Proc. New York Path. Soc. **24**: 87, 1924.
3. Warthin, in Osler, William: Modern Medicine, Philadelphia, Macrae Smith Company **4**: 951, 1928.
4. DeForest, H. P.: Acute Suppurative Inflammation of the Thoracic Duct: A New Disease: Report of a Case, New York State J. Med. **7**: 349, 1907.
5. Kryloff, E.: Zur Frage der eitrigen Entzündung des Ductus thoracicus, Virchows Arch. f. path. Anat. **226**: 1, 1927.
6. Wurm, H.: Zur Kasuistik der Entzündungen des Ductus thoracicus; Thrombolymphangitis des Halsteils mit Halsvenenthrombose nach hämorrhagischen Lungeninfarkt, Centralbl. f. allg. Path. u. path. Anat. **39**: 545 (May 15) 1927.

Regarding the etiology of this acute condition, nothing definite can be stated except that in three of the ten cases collected by Pappenheimer the streptococcus was isolated from the contents of the thoracic duct, which was true in Von Glahn's case and the case reported here. More than three fourths of the cases described occurred in men.

REPORT OF CASE

History.—A. D., a man, aged 55, a Puerto Rican, admitted to the Cumberland Hospital in the surgical service of Dr. J. E. Jennings (to whom I am indebted for the clinical history), Nov. 6, 1934, at 3 p. m., complained of severe abdominal pain. He had been drinking the night before and at about 4:30 a. m. the day of his admission he was suddenly seized with a sharp pain in the umbilical region. The pain, which was persistent, radiated to the rest of the abdomen and was accompanied by vomiting.

The past history revealed that for the last three months he had been having vague abdominal pains, which were relieved by solution of magnesium citrate. Several years previously he had had an attack of epididymitis and for the last few months he had been having a pink discharge from the urethra.

The family history was irrelevant.

Examination.—The patient was acutely ill, suffering from severe colicky pains in the abdomen. The vital signs were as follows: temperature 102 F., pulse 108, and respiration rate 22 per minute. The blood pressure on admission was 94 systolic, 72 diastolic.

Auscultation revealed heart sounds of poor quality and the presence of scattered moist râles over the right upper and left lower lobes of the lung posteriorly. There was also diminution of the breath sounds over these areas. The abdomen was distended and moderately rigid. The point of greatest tenderness was located in the epigastric region. Rebound tenderness and dulness in the flanks were both absent. Rectal examination failed to show any abnormalities.

Analysis of the urine showed an alkaline reaction, pink discoloration, the presence of numerous red blood cells and a trace of albumin.

The blood study showed the presence of 13,800 leukocytes per cubic millimeter, with 88 per cent polymorphonuclear cells and 12 per cent lymphocytes. A repeated study about twelve hours later showed a marked decline of the leukocytes to 5,850, with a rise in the proportion of the polymorphonuclear cells to 94 per cent.

The blood Wassermann test was reported negative on two occasions. The blood sugar was 120 mg. and the urine 18 mg. per hundred cubic centimeters. The blood diastase was 112.

The provisional diagnoses were (1) perforated gastric ulcer and (2) acute pancreatitis.

Clinical Course.—Because of the severity of the abdominal symptoms it was decided to perform an exploratory laparotomy. General anesthesia was used. On exploration the only abnormalities discovered were marked congestion of the distal third of the ileum, the presence of old adhesions binding the omentum to loops of the small intestine in the right lower quadrant, and a cystic mass in the pelvis, considered by the operator to be dilated sigmoid.

The patient reacted fairly well but within twenty-four hours after operation his temperature steadily rose to 105 F., accompanied by a chill and increase in the signs of pulmonary consolidation. On the second postoperative day the temperature suddenly dropped to 99 F. and then rapidly rose again to 105.5 F., at which time the patient became cyanotic and comatose and died.

A definite postoperative diagnosis was not made. Influenzal pneumonia with complicating ileitis was considered to be the most probable diagnosis.

POSTMORTEM EXAMINATION

Only the important and pertinent manifestations are described.

General Description.—The body was well developed but emaciated. The skin and mucous membranes were definitely cyanotic. The abdominal wall was the seat of a laparotomy wound from which turbid, red-brown fluid escaped as the sutures were removed.

Cavities.—Peritoneal: The peritoneal cavity at the site of the incision was markedly congested. Only a small quantity

of serosanguineous exudate was present. The omentum was lightly adherent to the anterior abdominal wall.

Pleural: Both cavities contained numerous old adhesions. The right contained in addition about 100 cc. of thin, purulent exudate, encysted at the level of the eighth rib in the mid-axillary line.

Cardiovascular System.—The pathologic changes consisted essentially of congestion and cloudy swelling, usually associated with a severe toxemia.

Respiratory System.—Bronchi: The bronchi showed hyperemia and multiple, minute hemorrhages in the mucosa.

Lungs: The lungs showed apical scars and caseous deposits of an old tuberculous process. Interalveolar fibrosis was found in the sections of all lobes. The left upper and lower lobes also showed conglomerated areas of consolidation (lobular pneumonia).

Gastro-Intestinal System.—The esophagus and stomach were normal.

Intestine: The first portion of the duodenum was the seat of a diverticulum about 3 cm. in diameter and 5 cm. in depth.

The proximal portion of the ileum showed no disturbance. The distal 20 cm. of ileum was intensely congested and its wall markedly thickened. The mucosa, however, failed to show any gross changes other than congestion. Microscopically this portion of the ileum showed only a slight infiltration of polymorphonuclear cells involving all its layers. (This reaction might be attributed to surgical manipulation, since there was insufficient vascular response to suggest the presence of a true inflammatory ileitis.)

The mesentery at this site showed a similar degree of polymorphonuclear cell infiltration.

The appendix was bound to the brim of the pelvis by old adhesions and showed no gross or microscopic changes.

The spleen weighed 110 Gm. and presented the usual appearance of toxic splenitis.

The pancreas weighed 90 Gm. and showed no abnormalities.

Biliary System.—The liver weighed 1,800 Gm. and showed the usual cloudy swelling of a severe toxemia.

The gallbladder and bile ducts were normal.

Urinary System.—The kidneys weighed approximately 110 Gm. each and showed cloudy swelling, cortical cysts and very small areas of arteriosclerotic infarction.

The urinary bladder was dilated and its wall thickened by increase in fibrous tissue, congestion and edema.

The ureters were normal.

Endocrine System.—The thyroid, adrenals and pituitary showed no pathologic changes.

Genital System.—The penis, prostate and seminal vesicles were normal.

The right testis and epididymis were normal. The left testis and epididymis were each about one and a half times as large as those on the right and the diameter of the spermatic cord was about twice that of the right.

Sections through the left testis proper showed no gross or microscopic changes, but those of the epididymis presented numerous distended ducts, which were filled with amorphous, granular material. The rete testis was the seat of chronic inflammatory changes, with replacement fibrosis and marked varicosities, many of the vessels showing marked perivascular round cell and plasma cell infiltration. Some of the blood vessels were hyalinized, others were occluded by organized thrombi and still others were the seat of marked, acute inflammatory infiltrate.

Sections removed from various levels of the spermatic cord as it proceeded to the inguinal canal showed the varicosities already described to be more marked, presenting a suppurative character to the thrombophlebitis. The process became diminished at the termination of the pampiniform plexus, leaving the rest of the spermatic veins only slightly involved.

The ductus deferens, although the seat of fibrous thickening of its wall, showed no other pathologic condition.

Lymphatic System.—The left lateral and preaortic lymph nodes were enlarged and soft and were the seat of purulent changes. A number of these nodes were reduced to mere capsules filled with frankly hemorrhagic and purulent exudate. Several of such nodes were connected with the cisterna chyli, which was itself markedly distended by coagulated, as well as fluid exudate of purulent character. From here on the entire thoracic duct, as far as could be traced, was filled with similar exudate. At various levels along the duct, sacculations were found which markedly accentuated its usual varicose appearance. Its course in the posterior mediastinum between the aorta and the azygos veins was marked by brawny discoloration of the lymph nodes and of the connective tissue of this region, both of which were found to be the seat of marked polymorphonuclear cell infiltration, edema and hemorrhagic extravasation. Its course through the superior mediastinum was marked by similar changes. Although the duct could not be traced to its termination into the subclavian veins, the portion of it that arched in the root of the neck was traced to a suppurative mass of fat and lymph nodes. Sections of the duct at various levels showed purulent infiltration of its wall and suppurative thrombosis, which in the sacculated areas completely occluded the lumen. The predominating elements of the thrombus consisted of disintegrated leukocytes, although here and there were also found clumps of bacteria and red cells.

Bacteriology.—The direct smears of the contents of the thoracic duct and of the exudate from the lymph nodes showed a pure growth of long chains of streptococci. On culture of the contents of the thoracic duct these organisms were found to be Streptococcus haemolyticus.

The same organisms were found in the pleural, mediastinal and peritoneal cavities, as well as in the exudate of the surgical wound of the abdominal wall.

Cultures and smears as well as guinea-pig tests were negative for tubercle bacilli. (The late Dr. Charles Norris, chief medical examiner of New York City, who examined the specimen, was of the impression that the condition strongly suggested a tuberculous origin. At his suggestion the search for tubercle bacilli was repeated several times, each time yielding negative results.)

The anatomic diagnoses were as follows:

1. Chronic epididymitis.
2. Suppurative thrombophlebitis of the pampiniform plexus.
3. Acute suppurative lymphadenitis (lumbar, thoracic, mediastinal and cervical).
4. Suppurative thrombolymphangitis of the thoracic duct.
5. Suppurative mediastinitis and pleuritis.
6. Confluent lobular pneumonia and healed apical tuberculosis.
7. Laparotomy wound with local peritonitis.
8. Cortical cysts of the kidney (arteriosclerotic).
9. Diverticulum of duodenum.

COMMENT

The chain of events in this case may be stated as follows: A dormant source of infection existed in the thrombophlebitis of the pampiniform plexus. This was complicated by a streptococcic infection (the respiratory tract being a possible portal of entry) and invasion of the organism into the adjacent lymphatics. This region being drained by the lumbar lymph nodes, the latter became purulent and the process extended to the cisterna. From there the suppurative thrombolymphangitis ascended, causing a suppurative mediastinitis, which was fatal.

Kryloff's case was similar to the present case in many respects. The onset of the condition was acute and the patient presented symptoms referable to an inflammatory condition in the right lower quadrant, with localized tenderness in the ileocecal region. A clinical diagnosis of grip was made, which was also true in this case, and autopsy revealed changes similar to those described here; i. e., acute tracheitis and bronchitis, purulent pleuritis, bronchopneumonia, and thrombolymphangitis of the thoracic duct, with marked purulent lymphadenitis of the thoracic, abdominal and inguinal nodes. As in this case the course was very rapid, the condition terminating fatally within five days of the onset.

In Kryloff's case the organism was believed to have invaded the lymphatics from an area of cellulitis in the left leg; while in this case the original source could not be determined with certainty, the inflammation of the epididymis and the thrombophlebitis of the pampiniform plexus undoubtedly led to the involvement of the thoracic duct. According to Pappenheimer, death in these cases is due to peritonitis and septicemia rather than to the thrombolymphangitis of the thoracic duct. In this case, however, it is difficult to believe that so purulent a process and so marked an invasion of streptococci into the contents of the thoracic duct could be anything other than an important factor in the cause of death.

North Portland Avenue and Auburn Place.

NEEDLE (ASPIRATION) BIOPSY

ROBERT P. BALL, M.D., CHATTANOOGA, TENN.
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Needle aspiration has been a much used therapeutic and diagnostic procedure in general practice. The diagnostic possibilities are much greater when the macroscopic and bacteriologic examination of the aspirated material is extended to include sectioning and staining solid elements present. In the last few years various workers [1] have demonstrated the practical application of this method in obtaining tissue for biopsy. It has been used in every part of the body including the prostate,[2] bone,[3] lung,[4] breast [5] and vertebral column.[6] Klinger and Burch [7] have used aspiration biopsy to obtain specimens of the endometrium. Others have modified the needle so as to use a punch [8] method.

The diagnosis of bone lesions is materially aided by the use of needle (aspiration) biopsy. The procedure is relatively painless and not expensive, and the patient will often permit the insertion of a needle when he would refuse an open incision. The osseous system is characterized by compactness and denseness. However, in pathologic conditions it loses its denseness and compactness so as readily to permit the insertion of a needle. Particularly is this true of localized destructive lesions due to inflammations or neoplasms.

Bone lesions are well demonstrated by roentgenography but in many cases there are not sufficient pathognomonic alterations to make a positive diagnosis. Since treatment and prognosis are dependent on the diagnosis, it is important to establish this with accuracy.

The following technic has proved satisfactory for obtaining biopsy material. It should be unnecessary to emphasize attention to every detail, for without doing so any technical procedure is liable to give unsatisfactory results.

TECHNIC

The skin is prepared with iodine and alcohol and anesthetized with procaine hydrochloride, and a number 18 needle is inserted into the lesion from which the material is to be obtained. A 50 or 100 cc. Luer syringe is then attached to the needle and the plunger withdrawn far enough to be grasped with the palm of the hand. The plunger is held steady in one hand and the barrel of the syringe with the needle attached is rotated from 90 to 120 degrees, at the same time the needle being withdrawn or inserted a few millimeters. This maneuver should be repeated only until about 2 or 3 cc. of material is aspirated, which will usually contain blood. The needle is then withdrawn while traction is maintained on the plunger to hold the vacuum. On withdrawal, air rushing through the needle to close the vacuum in the syringe will clear it and the syringe tip of the tissue fragments. The plunger is then withdrawn, care being taken not to force any material back into the syringe tip. Bacteriologic specimens or smears are taken at this time and the bits of tissue are teased from the blood clot and placed in a heap on a dry piece of paper. This is immediately dropped in 10 per cent solution of formaldehyde for fixation and then carried through dehydrating solutions, cleared in xylene and embedded in paraffin for sectioning. Sections are stained with hematoxylin and eosin and mounted in balsam for permanent preservation.

927 East Third Street.

Read before the Section on Radiology at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 15, 1936.

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7. Klinger, H. H., and Burch, J. C.: Suction in Obtaining Endometrial Biopsies, J. A. M. A. **99**: 559 (Aug. 13) 1932.
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Special Article

THE PHARMACOPEIA AND THE PHYSICIAN

THE USE OF HYPNOTICS

G. P. GRABFIELD, M.D.
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This is one of a series of articles written by eminent clinicians for the purpose of extending information concerning the official medicines. The twenty-four articles in this series have been planned and developed through the cooperation of the U. S. Pharmacopeial Committee of Revision and THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.—ED.

The poet's dream of a harmless sleeping potion achieved reality through a lucky accident coupled with scientific vision when Liebreich [1] noted that animals went into an apparently normal sleep when given chloral hydrate and awoke without evident harm. Since that time, enormous industry and ingenuity have been expended to improve on this drug.[2] In no field of pharmacology has the relationship between physiologic action and chemical constitution been more assiduously studied. And yet, in some experiments done in 1930, chloral still stood at the head of the list of efficient hypnotics.[3] Most of the recent work has concerned itself with the barbituric acid derivatives introduced into medicine by Fischer and von Mering [4] in 1904. However, not all the work has been concerned with these, and in a recent review Hjort [5] has outlined compounds of ten chemical groups possessing sufficient hypnotic effects to have merited the study of a large number of individuals. It is perhaps sufficient to say that the ideal hypnotic drug has not been found and that the realization of the accurate correlation between physiologic action and chemical constitution or physical properties cannot as yet be made in this group of drugs, even though the effect of certain groups in the molecule has been pretty well established.

The general action of the hypnotics is that of a descending depression of the central nervous system, beginning with the cortex. There is a large difference in the dose required to affect centers below the cortex as compared with that necessary to produce only cortical depression. However, individual compounds probably act at slightly different points in the cortex and some exhibit earlier subcortical effects than others. As doses are increased, the depression deepens and gradually the action on the deeper parts of the nervous system becomes more evident until one can see in the experimental animal and in the patient definite evidence of action on one of the vital centers in the medulla—usually the respiratory center. Of course, in addition to their action on the central nervous system most of these drugs have other effects. In some, the lethal effects are associated with their metabolism in the body. For example, chloral may kill by secondary degeneration of the liver or by its direct effect on the heart. The sulfone compounds, such as sulfonethylmethane exert their effects on the liver and kidney, signaled by

1. Liebreich, M. E. O.: Berl. klin. Wchnschr. **62**: 325, 1869.
2. Lundy, J. S., and Osterberg, A. E.: Proc. Staff Meet., Mayo Clin. **4**: 386 (Dec. 18) 1929. Renner, Albrecht: Schlafmittel Therapie, Berlin, Julius Springer, 1925.
3. Grabfield, G. P.: Observations on Efficiency of Commonly Used Hypnotics, J. A. M. A. **96**: 1865 (May 30) 1931.
4. Fischer, E., and von Mering, J.: Therap. d. Gegenw. **5**: 97, 1903.
5. Hjort: Medical Papers dedicated to H. A. Christian, Baltimore, Williams & Wilkins Company, 1936, p. 903.

the hematoporphyrinuria that follows their use. This drug is also said to exert an effect on the purine metabolism, and some of the barbiturates are excreted in part as a uric acid complex. One wonders whether the purine metabolism may not be concerned with the central nervous system action of this group of drugs in some way, in view of Lennox's[6] observation on the rise in blood uric acid in certain successful procedures in epilepsy, though he does not connect this observation with the success of the therapy.

The site of action on the cortex is probably within the cells themselves, as effects producing the changes accompanying sleep are evident long before any significant changes in pain perception can be demonstrated. Since these drugs act primarily at a point superior to the first synapse for painful stimuli within the central nervous system, it is to be expected that they could be prescribed with the analgesic drugs of the antipyretic series, which probably act in the thalamic regions where the pain stimuli arrive in the brain. Such has been found to be the case,[7] interestingly enough, in both directions; that is, both the hypnotic effect and the analgesic effect are enhanced by the simultaneous exhibition of an analgesic and a soporific drug. It is interesting to note the variation in the effect of these drugs, the general pattern of whose action is essentially the same. Thus there is variation in absorption and excretion and in minor effects on various cortical or subcortical mechanisms, such as temperature, equilibrating sense and the special senses. Such actions may become apparent as idiosyncrasies of certain individuals to some of these drugs. Some act slowly after absorption, some rapidly; some act as chemical entities, whereas some are changed into active forms after absorption; some are excreted in the urine unchanged, some partly changed, and some are completely destroyed in the body. Any classification for therapeutic purposes cannot be made on the basis of such variable properties and must therefore be pragmatic in using as a basis the rapidity of onset and duration of sleep produced, with due consideration in choice of drugs to the frequency of the minor effects mentioned and the duration of action beyond actual sleep. On this basis the drugs to be discussed may be divided as follows: chloral, "Evipal," paraldehyde, carbromal (rapidly acting); sulfonethylmethane (slow acting); barbital, pentobarbital (between these). "Evipal," carbromal and paraldehyde (especially the first) act over a shorter period than pentobarbital, barbital, chloral and sulfonethylmethane (as to duration of action).

In addition to these, certain drugs must be considered which act primarily on the motor side of the nervous system though probably possessing some general sedative effects as well; namely, phenobarbital and the bromides. The former is an example of the variations in action that may be introduced by slight chemical changes in the molecule—the introduction of the phenol group apparently enhances the effect on the motor cortex to the point where the general sedative effects are partly masked. Before the foregoing general pharmacologic principles are applied, it is necessary to consider sleeplessness in more detail.

The treatment of insomnia is a subject that can be considered from many angles. It seems wise to limit the discussion to certain phases of the subject, in order to avoid excursions into the realm of psychiatry. Text books of internal medicine do not recognize such a condition. Yet all know what is meant by the term, though from an etymological point of view it simply means lack of sleep from any cause. It may be due to pain, discomfort, dyspnea, frequency, diarrhea, itching or any symptom that forces itself on the sensorium. However, the usual idea of insomnia as a medical problem is that of sleeplessness unconnected with somatic symptoms. If sleeplessness is due to some definite cause, such as one of those enumerated, treatment is necessarily directed to the relief of the underlying symptom. True insomnia, therefore, may be defined as sleeplessness due to no underlying stimulation preventing sleep or awakening the sufferer. The condition may assume different forms.

First, and most common, is difficulty in going to sleep; second, awakening early and inability to sleep again; third, periods of wakefulness in the middle of the night, and, finally, a reversal of the sleep mechanism with wakefulness at night and sleep by day. The cause of the first three types usually is habit or some emotional disturbance, either acute or as a manifestation of a psychoneurosis. The last, most distressing form, is almost exclusively found in cerebral arteriosclerosis and usually is accompanied by other manifestations of senility.

Since it is axiomatic that the treatment of any symptom should be directed to its cause, and since the usual cause of insomnia is either habit or a psychoneurosis, it is obvious that treatment must be directed against these underlying conditions.

However, in connection with the foregoing, the indications for the use of hypnotic drugs may be concisely formulated. The following four indications for the use of soporific drugs seem clear: 1. When sleeplessness can be foreseen as the result of an acute situation of short duration. 2. When wakefulness is clearly due to an obvious cause, and the symptomatic relief will aid in the treatment. 3. When the cause is unclear but relief is urgently demanded, and no danger of masking night symptoms is present. 4. In the reversal of the sleep mechanism in cerebral arteriosclerosis.

The first group includes such situations as the near relatives of a deceased person before the funeral, the first night in the hospital, and others that will readily come to the reader's mind. In the second group are such cases as discomfort from any of the causes previously enumerated. Even though the cause is unclear and definite somatic symptoms are present, immediate relief of the third group of sufferers may aid subsequent therapy, especially if the cause is psychic. Finally, relief for the fourth group demands the utmost care in the use of drugs to change the mechanism without intensifying it by the late action of the soporific.

To connect these two classifications will provide the appropriate therapy.

Considering first those with rapid action over a comparatively short period of time suitable for patients unable to get to sleep, one finds first of all paraldehyde and chloral, both of which have stood the test of time. The obvious disadvantage of paraldehyde lies in its odor on the breath the following day, but this is often more than compensated by its efficacy and above all by the practical absence of toxicity. It must be remembered, however, that the combined use of morphine and paraldehyde is highly toxic. Chloral is undoubtedly the most useful of all the hypnotics and the cheapest. Given well diluted in water it produces sleep within an hour, and in proper doses (from 0.3 to 0.6 Gm., or

6. Lennox, W. G., and O'Connor, Marie: J. Biol. Chem. **66**: 521 (Dec.) 1925.
7. Rentz, E.: Arch. f. exper. Path. u. Pharmakol. **161**: 379, 1931.

5 to 10 grains) is entirely harmless even in heart disease. There is no doubt that in toxic doses it kills by its effect on the heart, but the fear of this side action has been engendered by the large dosage that has always been recommended up to the last few years. None the less, it is not the hypnotic of choice in heart disease, though it may be used if for some reason the barbitals and paraldehyde are contraindicated in a given patient. For quick action of short duration, two of the barbiturate series recommend themselves. Pentobarbital (from 60 to 120 mg., or 1 to 2 grains) has proved very useful.

Barbital itself is still probably the most satisfactory drug when more prolonged and less prompt action is desired. In all these drugs both intensity and duration of action are increased with increasing doses. If, therefore, more than 0.6 Gm. (10 grains) of barbital is found necessary to produce the effect desired, another drug should be used. Comparable to barbital, but of another chemical constitution, is "Sabromin," considerably more expensive than barbital; carbromal also may be tried. Sulfonethylmethane has fallen into disuse on account of the long period before it acts and because of its prolonged stay in the body. However, these very qualities can be utilized in selected cases. It is usually effective from five to seven hours after administration and is particularly useful in the second group of patients. Its action, however, is prolonged and it may leave a certain amount of drowsiness the next day. Furthermore, repetition over a comparatively short period, even in ordinary doses, is said to lead to liver damage. In occasional selected cases for short periods it may be extremely useful, especially in supplementing the action of some of the shorter acting drugs. Thus the combination of barbital with sulfonethylmethane given an hour or two before bedtime may prove more satisfactory than double the dose of barbital for producing a deep sleep throughout the night. This evidence of synergism suggests that other combinations might prove equally useful. The unfortunate one between paraldehyde and morphine has been mentioned and another between chloral and alcohol is well known, even to the underworld, in the form of "knockout drops." "Synergism" between the hypnotics and antipyretics (analgesics) has been fairly well studied in some instances. This should be utilized when pain or discomfort is associated with insomnia. While the antipyretic drugs of the types acetylsalicylic acid, aminopyrine and acetophenetidin have almost no hypnotic actions, the soporifics discussed have equally little effect on pain. Yet combinations of these two groups of drugs enhance the effects of each. In this connection it is well to remember that both morphine and codeine are inefficient hypnotics as compared with the drugs discussed. Finally, on certain occasions sleep is disturbed, largely by motor restlessness, "the fidgets," not directly associated with cerebral activity. Under such circumstances, phenobarbital ("luminal") and the bromides are most useful, but their effects are prolonged on a comparatively low level of intensity. Both are poor hypnotics in the strict sense of the term and produce their quieting effect by their depression of the motor side of the central nervous system; neither should be used as a simple soporific. It seems hardly necessary to caution against the use of morphine when pain is not a factor; and, while scopolamine alone or with morphine may be useful in states of great motor excitement, it should not be considered as an ordinary hypnotic.

It should be understood that the foregoing remarks apply primarily to the use of these drugs for simulating normal sleep. The problem of preanesthetic medication is an entirely different one. The purpose here is to find a drug that will relieve the apprehensive attitude of the patient, have no untoward effect in combination with the anesthetic about to be used, and produce partial anesthesia, to be completed by a lesser amount of inhalation anesthetic. It is noteworthy that historically the drugs that have been suggested for preanesthetic medication were originally introduced as anesthetics. They have all the objections of any fixed anesthetic. Many accidents have occurred, particularly with tribromethanol. Some drugs so introduced have come subsequently to be recommended as hypnotics, but most present no advantages over those in common use.

Apparently for preanesthetic medication and for a partial anesthetic in obstetrics,[8] pentobarbital sodium has proved to be most satisfactory in that it is quick acting and fits well with all the inhalation anesthetics.

Since the use of soporifics for this purpose has become common, a tendency has arisen of giving them as hypnotics in larger doses than is warranted for simple sedation. This has led to the use of drugs that are actually not very efficient in doses that are sufficiently large to produce some of the untoward toxic symptoms, such as delirium and ataxia. It should be repeated that in doses which produce simulation of normal sleep the group of drugs that is being discussed has little, if any, pain relieving qualities. This fact is to be emphasized, since too often the physician exhibits large doses of hypnotics when the use of one of the analgesic drugs would be more efficient in producing sleep. When sleeplessness is due to pain or discomfort, one of the analgesic drugs, such as acetylsalicylic acid, acetophenetidin or aminopyrine, should be used either alone or in combination with hypnotics. The drugs of these two groups have been shown to have a synergism with each other and skilful mixtures of barbital or chloral with one of this group are frequently surprisingly efficient, even in pain as severe as that of spinal metastases.

This leads to the consideration of the opium group, which should not be exhibited except for certain very definite indications, owing primarily to their habit forming qualities.[9] Morphine itself, though hypnotic, is more efficient in the relief of pain, whereas codeine is not very efficient for the relief of pain or for the production of sleep, its particular field being in the depression of the cough center. As to habit formation, of course, this is primarily a property of morphine; but, unfortunately, the newer derivatives of morphine appear to offer no improvement in this respect. Codeine apparently does not furnish sufficient euphoria to be habit forming. It is probable that the continued use of any of these drugs produces certain tolerance, but from a practical point of view this is not significant and habit formation from the hypnotics is psychic rather than otherwise.

A discussion of sleep producing agents would not be complete without the mention of their use with suicidal intent. The readiness with which these drugs can be purchased by the public makes them ideal agents. Fortunately the lethal doses are larger than the layman thinks, so that the attempts are often unsuccessful. It should not be forgotten that occasionally delirium is a symptom of poisoning with these agents, especially

8. Irving, F. C.; Berman, S., and Nelson, H. B.: Surg., Gynec. & Obst. **58**: 1 (Jan.) 1934.
9. Gunn, I. A.: Physiol. Rev. **3**: 41 (Jan.) 1923.

with the bromides.[10] Many treatments have been advised for patients under the influence of these narcotics. Analeptics of all sorts have been used both logically and illogically.[11] The use of strychnine is not desirable because its action is primarily on the spinal cord,[12] and while these drugs can control the convulsions from strychnine poisoning from above, the converse obviously cannot hold true. "Coramine"[13] has been tried with favorable results. However, the most striking results have been obtained by the use of picrotoxin,[14] owing to the stimulating effect of this drug on the vital centers of the medulla in keeping the patient alive until the toxic drug can be removed from the body. However, the difficulty lies in having the picrotoxin when it is needed and in the fact that picrotoxin is a dangerous drug.[15] In addition, the fluid intake must be high and introduced by all routes, as a percentage of many of the drugs is excreted through the kidneys. Diuretics may also prove of value.[16] Care should be taken to prevent chilling of the patient. Nutrient enemas or even feeding by nasal tube may be necessary if stupor is prolonged.

In exhibiting the hypnotics, the physician does well to follow the fundamental principle of sound therapeutics, which is to learn thoroughly all the possibilities of a few drugs before adding to his armamentarium many substances hastily introduced and inadequately tested.

319 Longwood Avenue.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

PAUL NICHOLAS LEECH, Secretary.

GADOMENT NOT ACCEPTABLE FOR N. N. R.

Gadoment is the coined, proprietary name under which E. L. Patch & Co. markets a preparation stated in the firm's house organ, *Patchwork*, to contain "70% Cod Liver Oil in a wax base with Zinc Oxide Benzoin and Phenol." According to a trade package it is proposed for use in the treatment of burns, cuts and minor skin irritations. The composition is not declared on the trade package.

Early in 1935, E. L. Patch and Co. inquired of the Council's Secretary what would be the attitude of the Council on the use of the trademarked name "Gadoment." The firm did not at that time present the product for the Council's consideration, nor has Gadoment since been presented. The Council's secretary asked the firm on what premises it would base the claim for the use of a proprietary name.

Some further correspondence was carried on between the firm and the Secretary concerning the name "Gadoment," the firm stating that the name does not suggest diseases, pathologic conditions or therapeutic indications and that it simply indicates to physicians the potent ingredients. The firm also stated that Gadoment is the first of this class of preparations and therefore is entitled to a special name. In the end, the Council held that the firm's right to the use of a proprietary name for this product was not established.

In a later communication the firm stated that it was gathering data on this preparation. The Secretary explained to the firm that a product should not be submitted to the medical profession for use until evidence for such use had been established and that it would not be keeping faith with the profession if, on the one hand, the product was advertised to the profession for certain indications, and on the other hand the Council was informed that the firm did not have sufficient evidence.

As long ago as November and December 1934, in the firm's house organ sent to physicians and dentists, *Patchwork* (Vol. 17, No. 6, p. 4), there was an entire page devoted to cod liver oil in the treatment of skin diseases and an advertisement for the new cod liver oil treatment for burns and other skin injuries, "Gadoment-Patch."

Further, in *Patchwork* (Vol. 18, No. 6, p. 2, 1935) there is comment on Gadoment entitled "Gadoment Clinical Studies" and illustrations of varicose ulcer of six years' duration with the same case discharged after ten weeks' treatment. Mention is also made of "descriptive literature" on Gadoment. This has not been submitted for the Council's consideration.

The firm offered no further argument but apparently proceeded with the marketing of the product with the label claims already pointed out.

From its consideration of the evidence from the literature, the Council concluded that the whole subject of cod liver oil treatment of burns and wounds is still in an experimental stage. Lauber finds that vitamin A produces no acceleration in the process of wound healing, and in the case of concentrated application he even noted a slight retardation. He noted that vitamins B_1 and C produced slight retardation in wound healing when given in comparatively large doses and that vitamin D produced a slight acceleration when administered in low concentration, but in moderate doses it had no effect on the healing of wounds, and in concentrated doses it even retards healing. Löhr found that addition of petrolatum reduces the bactericidal power of cod liver oil and calls for careful examination as regards sterility. Moreover, Lauber apparently disagrees with the observations of Löhr in regard to the value of these local applications of cod liver oil, and he even states that acceleration of the healing process is never as convincing as following oral administration in small doses of vitamin A, and that oral administration of vitamin D had no effect whatever on the wound healing process. Lauber also deplores lack of definite statements regarding the vitamin contents of vitamin ointments in the treatment of wounds and considers it inadvisable to use ointment with various components.

The package cover for Gadoment indicates to the user its purpose for treatment of certain diseases. This is in conflict with the Council's rules concerning indirect advertising of products. It also states that "A special base which physicians have found most desirable as a dressing for skin injuries" is used. This is in conflict with the Council's rule providing for unambiguous declaration of composition of a product.

The Council desires to emphasize the fact that E. L. Patch & Co., which has for years had relations with the Council and should thus be conversant with proper procedure, has in the case of Gadoment gone precisely contrary to the accepted way of introducing a new preparation. Instead of collecting evidence for claims and then presenting this to the Council, the firm went ahead promoting the product with the unconfirmed claims. The Council therefore found it necessary to consider the preparation on its own initiative and to inform the medical profession concerning it and the claims made for it.

The Council declared Gadoment unacceptable for New and Nonofficial Remedies because it is an unoriginal product of insufficiently declared composition marketed under a coined proprietary name with unwarranted therapeutic claims, and indirectly advertised to the public.

10. Diethelm, Oskar: J. Nerv. & Ment. Dis. **71**: 151 (Feb.) 1930.
11. Barlow, O. W.: J. Pharmacol. & Exper. Therap. **55**: 1 (Sept.) 1935.
12. de Barenne, J. G. D.: Physiol. Rev. **13**: 325 (July) 1933.
13. Schube, P. G.: New England J. Med. **214**: 926 (May 7) 1936.
14. Maloney, A. H.; Fitch, R. H., and Tatum, A. L.: J. Pharmacol. & Exper. Therap. **41**: 465 (April) 1931.
15. Status of Picrotoxin, Report of Council on Pharmacy and Chemistry, J. A. M. A. **107**: 354 (Aug. 1) 1936.
16. Gower, W. E., and Tatum, A. L.: J. Pharmacol. & Exper. Therap. **37**: 481 (Dec.) 1929.

PHYSICIANS SPECIALIZING IN PATHOLOGY AND CLINICAL PATHOLOGY

PREPARED BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

For the past ten years the Council on Medical Education and Hospitals has actively promoted the practice of pathology and clinical pathology by qualified physicians. A list of approved laboratories was maintained until 1931, when for obvious reasons the system was changed to one of certifying individual pathologists according to a minimum standard of qualifications.

The results of the Council's work are gratifying. Increasing numbers of hospitals throughout the country have employed qualified physician-pathologists, where previously this service was in the hands of technicians under nominal supervision or under no supervision. The number of commercial laboratories under lay direction has been reduced. Interns, nurses and technicians are receiving better training in pathology and clinical laboratory work. More and better necropsies are being secured. The organized profession has been constantly reminded that the practice of pathology and clinical pathology is the practice of medicine, and as a result the patronage of lay laboratories has been steadily withdrawn and the patient is better served. The following list contains the names of 902 physicians who were found to meet the "Essentials" and were recommended by the Council's advisers.

Those engaged in teaching, research and other activities are admitted, as well as those in active practice. For the list of pathologists in government service, see page 1389.

LIST OF PATHOLOGISTS

NAME — ADDRESS

ALABAMA

Birmingham
Graham, Geo. S.....1023 S. 20th St.

Fairfield
Jones, Walter C.....
.Tennessee Coal, Iron and Railroad Hospital

Montgomery
Trumper, Abraham.....201 Montgomery St.

ARIZONA

Phoenix
Hartgraves, Thos. A.....
.....10th St. and McDowell Rd.
Mills, H. P.....15 E. Monroe St.

Tucson
Hicks, Robert Alan.....1800 E. Speedway
Langdon, Harry K.....2717 E. 4th St.

ARKANSAS

Hot Springs
Lee, Dee C.....236 Central Ave.

Little Rock
Hoge, S. F.....215 E. 6th St.
Thatcher, Harvey S.....
University of Arkansas School of Medicine

Pine Bluff
Pittman, Wm. G.....202 Pine St.

CALIFORNIA

Berkeley
Reich, Wm. W.....2236 E. Durant Ave.

Glendale
Kimball, Theodore S.....102 N. Brand Blvd.

Hollywood
Andrews, Vernon L.....1322 N. Vermont Ave.

Loma Linda
Cutler, O. I.....
Dale, Charles L.....
.....College of Medical Evangelists

Long Beach
Mikels, Benjamin M.....Seaside Hospital
Shackford, B. C.....117 E. 8th St.

Los Angeles
Bettin, Mona E.....727 W. 7th St.
Bonynge, Chas. W.....1930 Wilshire Blvd.
Brem, Walter V.....657 S. Westlake Ave.
Butt, Edward M.....1930 Wilshire Blvd.
Evans, Newton.....1200 N. State St.
Hall, Ernest M.....3551 University Ave.
Hammack, Roy W.....657 S. Westlake Ave.
Hemken, Louisa.....3551 University Ave.
Hill, Robt. B.....511 S. Bonnie Brae
Hyland, Clarence M.....4614 Sunset Blvd.
Lindberg, Ludwig.....1407 S. Hope St.
Maner, Geo. D.....657 S. Westlake Ave.
Pratt, Orlyn B.....312 N. Boyle Ave.
Setzler, Geo. B.....1052 W. 6th St.
Zeller, A. H.....657 S. Westlake Ave.

Oakland
Glenn, Robt. A.....Samuel Merritt Hospital
Michael, Paul.....434, 30th St.
Moore, Gertrude.....2404 Broadway

Olive View
Bogen, Emil.....Olive View Sanatorium

Pasadena
Foord, Alvin G...Huntington Memorial Hosp.
Sturdivant, B. Frank....St. Luke's Hospital

Pomona
Case, Lucius W.....1798 N. Garey St.

Redlands
Taltavall, Wm. A.....47 E. Vine St.

Sacramento
Christman, Paul Wm.....1027, 10th St.
Guttmann, Paul H.....1127, 11th St.
Johnson, Barton W.....
.....Sacramento County Hospital

San Diego
Ball, Howard A....San Diego Co. Gen. Hosp.
Elliott, Frances P.....1028, 32d St.
Pickard, Rawson J.....520 E St.
Sumerlin, Harold S.....2001, 4th Ave.
Thompson, Harold A.....233 A St.

San Francisco
Bolin, Zera E.....490 Post St.
Carr, Jesse L.....51 San Andreas Way
Lippman, Marion H.....135 Stockton St.
McNaught, James B.....
...Stanford University School of Medicine
Oliver, Harry R.....490 Post St.
Perry, Isabella Hester.Univ. of Calif. Med. Sch.
Smith, Elmer W.....2200 Hayes St.
Smith, Pearl M.....3700 California St.
Stowe, W. Parker.....St. Luke's Hospital
Wood, David A.....2398 Sacramento St.
Wyckoff, Harry A.....Stanford Univ. Hosp.

San Jose
Campbell, Lenore D.....396 S. 16th St.

Santa Ana
Martell, B. S.....115 Owens Dr.

Santa Monica
Kosky, Alfred A.....1250, 16th St.
McLean, Wm. J.....958, 24th St.

Stockton
Holliger, Chas. D.....242 N. Sutter St.

COLORADO

Colorado Springs
Ryder, Charles T.....1626 Wood Ave.
Staines, M. Ethelyn....23 E. Pikes Peak Ave.

Denver
Black, William C.....4200 E. 9th Ave.
Carson, Paul C.....Presbyterian Hospital
Dobos, E. I.....1818 Humboldt St.
Freshman, A. W.....227, 16th St.
Hillkowitz, Philip.....227, 16th St.
Jones, Rodney H.....227, 16th St.
Kingry, Charles B.....1616 Tremont Pl.
Mugrage, Edward R.....4200 E. 9th Ave.
Queen, Frank B.....4200 E. 9th Ave.
Thorsness, Edwin T....Denver General Hosp.
Williams, George Z.....227, 16th St.
Williams, Wm. W.....209, 16th St.

Pueblo
Dunlop, J. N.....Corwin Hospital
Maynard, C. W.....702 N. Main St.

CONNECTICUT

Danbury
McIlroy, P. T.....95 Locust Ave.

Hartford
Allen, Wilmar M.....20 S. Hudson St.
Hastings, Louis P.....370 Collins St.
Kendall, Ralph E.....20 S. Hudson St.

Middletown
Beauchemin, Joseph A..Connecticut State Hosp.
Fisher, Jessie W.....Middlesex Hospital

New Haven
Bartlett, Chas. J.....Grace Hospital

Norwalk
Murray, Archibald..Norwalk General Hospital

Stamford
Weaver, Bruce S.....77 South St.

Waterbury
Collins, Joseph O.....64 Robbins St.

DELAWARE

Wilmington
Gay, Douglas M.....Homeopathic Hospital
Hemsath, Fredk. A..14th and Washington Sts.

DISTRICT OF COLUMBIA

Washington
Cajigas, Tomas.....1801 Eye St., N.W.
Choisser, Roger Morrison....1335 H St., N.W.
Dardinski, Vincent J.....
.....Georgetown Univ. School of Medicine
Keilty, Robert A..1150 Connecticut Ave., N.W.
Langenstrass, K. H....St. Elizabeths Hospital
Lindsay, Janvier W.....1726 Eye St., N.W.
Neuman, Lester.....1835 Eye St., N.W.
Rice, E. Clarence.....1726 Eye St., N.W.
Selinger, Maurice A.....1726 Eye St., N.W.

FLORIDA

Jacksonville
Dyrenforth, L. Y.....1022 Park St.
Kirk, Wm. W.....208 Laura St.
Royce, Clayton E.....1022 Park St.

Miami
Youmans, Iva C.....653 S.W. 2d St.

Tampa
Mills, Herbert R.....706 Franklin St.

West Palm Beach
Johnson, V. M.....Good Samaritan Hospital

GEORGIA

Atlanta
Ayers, A. J.....384 Peachtree St.
Bishop, Everett L.....384 Peachtree St.
Klugh, Geo. F.....139 Forrest Ave., N.E.
Leadingham, R. S.....110 Medical Arts Bldg.
Matthews, Warren B.....Grady Hospital
Norris, Jack C.....810 Doctors Bldg.

Augusta
Pund, Edgar R.....Univ. of Ga. Sch. of Med.

Emory University
Kracke, Roy R.....Emory University Hospital
Parker, Francis P..Emory Univ. Sch. of Med.

Macon
Saye, Ernest B.....820 New St.

NAME ADDRESS

ILLINOIS

Bloomington
Markowitz, Benj.....219 N. Main St.

Chicago
Apfelbach, Carl W.....1753 W. Congress St.
Arkin, Aaron.....55 E. Washington St.
Benjamin, Eustace L.....185 N. Wabash Ave.
Brown, Seth E.....533 Grant Pl.
Croy, C. Churchill.....25 E. Washington St.
Davidsohn, Israel.....2750 W. 15th Pl.
Delaney, P. Arthur.....8114 Euclid Ave.
Dwyer, Thomas L.....232 W. 63d St.
Fishback, Hamilton R....303 E. Chicago Ave.
Gardner, Stella M.....30 N. Michigan Ave.
Hennemeyer, R. J.....1305 E. 63d St.
Hirsch, Edwin F.....1439 S. Michigan Ave.
Hospers, Cornelius A.....Englewood Hosp.
Howell, Katharine M.....29th and Ellis Ave.
Jaffe, Richard H.....533 Grant Pl.
Kearns, Jerry Joseph.....4458 Madison St.
Kirshbaum, Jack D.....7845 S. Essex Ave.
Kremer, Rudolph J.....333 Belden Ave.
Levine, Victor.....6000 S. Albany Ave.
Levinson, Samuel A.....1817 W. Polk St.
Lewis, Julian H.....4750 Champlain St.
Lincoln, Mary C.....30 N. Michigan Ave.
Matthies, Mabel M.....33 N. Wabash Ave.
Moore, Josiah J.....55 E. Washington St.
Murphy, Leonard J.....4753 Broadway
Murphy, Lyman C.....55 E. Washington St.
Neiman, Benj. H.....55 E. Washington St.
Nicoll, Homer K.....122 S. Michigan Ave.
Petersen, A. S. J.....45-67 W. 111th St.
Petersen, Wm. F.....1853 W. Polk St.
Pilot, Isadore.....185 N. Wabash Ave.
Pribram, Ernest.....4458 Malden St.
Ragins, Alex B.....Cook County Hospital
Rosenthal, Sol Roy.....1853 W. Polk St.
Rukstinat, George J.....1758 W. Harrison St.
Saphir, Otto.....29th and Ellis Ave.
Simonds, James P.....303 E. Chicago Ave.
Swan, Mary H.....55 E. Washington St.
Sweany, Henry C.....5601 N. Pulaski Rd.
Weiss, Emil.....Univ. of Ill., Coll. of Med.
Wells, H. Gideon.....
.....Dept. of Path., Univ. of Chicago

Decatur
Melnick, Perry J.....
.....Decatur and Macon County Hospital

Evanston
Gunn, Francis D.....2650 Ridge Ave.
Schultz, Oscar T.....355 Ridge Ave.

Joliet
Wilson, W. Henry.....204 Scott St.

Moline
Vollmer, Maud J.....1630 Fifth Ave.

Oak Park
Hill, Lewis R.....1011 Lake St.
Piette, Eugene C.....518 N. Austin Blvd.

Peoria
Bohrod, Milton G.....124 Randolph St.

Quincy
Cohen, Frank.....529 Hampshire St.

Rockford
Palmer, Harold D.....507 Chestnut St.

Springfield
Light, Frederick W.....St. John's Hospital

INDIANA

Bluffton
Nickel, Allen A. C.....Caylor-Nickel Clinic

Evansville
McGlumphy, Chas. B.....614 Mary St.
Seitz, Chas. L.....412 S.E. 4th St.

Fort Wayne
Rhamy, Bonnelle W.....347 W. Berry St.

Indianapolis
Banks, Horace M.....1604 N. Capitol Ave.
Forry, Frank.....Indiana Univ. Hospitals
Thornton, Harold C..Indianapolis City Hospital

Kokomo
Long, Alfred G.....St. Joseph Memorial Hosp.

Lafayette
Hunter, Frank P.....300 Main St.

Muncie
Cole, Russell E.....203 Western Reserve Bldg.

South Bend
Giordano, Alfred S.....531 N. Main St.
Lyon, Marcus W., Jr...122 N. Lafayette Blvd.

Terre Haute
Selsam, Etta Barkdoll.....
.....401 Rose Dispensary Bldg.
Williams, B. G. R.....St. Anthony's Hospital

IOWA

Cedar Rapids
Mulsow, Fredk. W.....120, 3d Ave., S.E.

Cherokee
Pope, John M.....

Clinton
Boyer, Edward E. II.....114, 32d Ave., N.

Davenport
Lamb, Frederick H.....220 Main St.

Des Moines
Weingart, Julius S.....406, 6th Ave.

Dubuque
McNamara, Frank P.....1596 Delhi St.

Iowa City
Herrmann, Walter W.....University of Iowa
Smith, Harry P..132 Medical Laboratory Bldg.
Thatcher, W. C.....University of Iowa
Warner, Emory D.....
.....124 Medical Laboratory Bldg.

Mason City
Morgan, Harold W...St. Joseph's Mercy Hosp.

New Hampton
Haumeder, M. Eva.....

Ottumwa
Hecker, Friedrich A.....130 E. Maple Ave.

Sioux City
Starry, Allen C.....St. Joseph's Mercy Hosp.

KANSAS

Kansas City
Wahl, Harry R.....Univ. of Kansas Hospitals

Salina
Moses, Howard N.....100 S. Santa Fe St.

Topeka
Lattimore, John L.....901 Kansas Ave.

Wichita
Hellwig, C. Alexander....St. Francis Hospital
Jones, Maurice L.....Wichita Hospital

KENTUCKY

Lexington
Maxwell, Elmer S.....190 N. Upper St.

Louisville
Allen, John D.....608 S. 4th St.
Gordon, Harold.....Univ. of Louisville
Miller, Aura J.....323 E. Chestnut St.
Weeter, Harry M.....332 W. Broadway

Pewee Valley
Peters, John R...Pewee Valley Sanit. & Hosp.

LOUISIANA

Baton Rouge
Beven, John L.....
.....Our Lady of the Lake Sanitarium

Lake Charles
Hebert, Louis A.....834 Ryan St.

Monroe
Pracher, John.....301 Jackson St.

New Orleans
Bowden, Margaret P. H.....210 Baronne St.
Couret, Maurice J.....2000 Tulane Ave.
Friedrichs, Andrew V.....921 Canal St.
Hauser, George H.....927 Canal St.
Lanford, John A.....3500 Prytania St.
Lawson, Edwin H.....2700 Napoleon Ave.
Maher, Aldea.....1110 American Bank Bldg.
Ogden, M. A.....2226 Ursuline Ave.

Shreveport
Butler, Willis P.....941 Margaret St.
Ellis, Fredk. G.....624 Travis St.

MAINE

Bangor
Thompson, H. E.....250 State St.

Lewiston
Beliveau, Romeo A...St. Mary's General Hosp.
Gottlieb, Julius.....49 Central Ave.

Portland
Warren, Mortimer.....22 Arsenal St.

MARYLAND

Baltimore
Acton, Conrad.....101 W. Read St.
Collenberg, Henry T.....2 W. Read St.
Gichner, Manuel G.....2426 Eutaw Pl.
Maldeis, Howard J.....104 W. Madison St.
Spencer, Hugh R.....University of Maryland

MASSACHUSETTS

Boston
Belding, David L.....80 E. Concord St.
Branch, Chas. F.....80 E. Concord St.
Burnett, Francis L.....205 Beacon St.
Dunbar, Frank H.....43 Bay State Rd.
Fienberg, Robert.....3 Copeland St.
Flashman, David H.....37 Schuyler St.
Gates, Olive.....
....Collis P. Huntington Memorial Hospital
Hinton, Wm. A.....25 Bennet St.
Hooker, Sanford B.....80 E. Concord St.
Leary, Olga Cushing.....43 Bay State Rd.
Leary, Timothy.....43 Bay State Rd.
Mallory, Tracy B.....
.....Massachusetts General Hospital
Oslin, J. Edwin.....30 Huntington Ave.
Raskin, Naomi.....Boston State Hospital
Rooney, James Stewart...53 Parker Hill Ave.
Schlesinger, Monroe J.....330 Brookline Ave.
Steele, Albert E.....23 Bay State Rd.
Ulrich, Helmuth.....30 Huntington Ave.
Warren, Shields.....195 Pilgrim Rd.

Bradford
Bartlett, Bernice A.....11 Haseltine St.

Brookline
Dalrymple, S. C.....233 Walnut St.

Fall River
Beasley, Elmus D.....1820 Highland Ave.
Walsh, James H.....538 Prospect St.

Lowell
Rodger, James Y.....226 Central St.

New Bedford
Wason, Isabel Mary.....101 Page St.

Pittsfield
Criscitiello, Modestino.....8 Bank Row
Scoville, Helen M.....741 North St.

Springfield
Dwyer, John E.....146 Chestnut St.
Jones, Fred D.....20 Maple St.

Westboro
Pierce, Lydia Baker....Westboro State Hosp.

Worcester
Elliott, William J.....119 Belmont St.
Freeman, William.....P.O. Box 489
Goodale, Raymond H....Worcester City Hosp.
Looney, Joseph M....Worcester State Hospital
Moran, William G.....73 Vernon St.

MICHIGAN

Ann Arbor
Bugher, John C..Dept. of Path., Univ. of Mich.
Howard, S. C.....326 N. Ingalls St.
Wanstrom, Ruth C.....
.....Dept. of Path., Univ. of Mich.
Weller, C. V....Dept. of Path., Univ. of Mich.

Battle Creek
Humphrey, Arthur A.....
.....Leila Y. Post Montgomery Hospital
Lewis, Welcome B....Battle Creek Sanitarium
Roth, Paul.....Battle Creek Sanitarium

Bay City
Gamble, Wm. G., Jr.....2010, 5th Ave.

Detroit
Amolsch, Arthur L..Wayne Univ., Coll. of Med.
Beaver, Donald C.....Woman's Hospital
Brines, Osborne A.....Receiving Hospital
Clark, Harry L.....5057 Woodward Ave.
Cope, Henry E.....1551 Woodward Ave.
Davis, James E.....1512 St. Antoine St.
Hartman, Frank W.....Henry Ford Hosp.
Kasper, Jos. A.....1151 Taylor Ave.
Morse, Plinn F.....Harper Hospital
Owen, Clarence I.....4160 John R St.
Owen, R. G.....1551 Woodward Ave.
Stafford, Frank W.....1111 Griswold St.

Eloise
Gould, S. E....Eloise Hospital and Infirmary

Flint
Backus, Glenn R.....901 Begole St.

Grand Rapids
Bond, Geo. L.....114 Fulton St., E.
German, Wm. M...Blodgett Memorial Hospital

Grosse Pointe
Gruhzit, Oswald M.....580 Hampton Rd.

Kalamazoo
Prentice, Hazel R.....3404 Oakland Dr.

Pontiac
Olsen, Richard E.....33 W. Huron St.

Saginaw
Lohr, Oliver W.....504 Janes Ave.

MINNESOTA

Duluth
Berdez, George Louis.....St. Mary's Hospital
Wells, Arthur H.....St. Luke's Hospital

Minneapolis
Baker, Looe.....1111 Nicollet Ave.
Drake, Charles R.....900 Nicollet Ave.
Grave, Floyd.....823 Nicollet Ave.
Lufkin, Nathaniel H.....
.....424 W. Diamond Lake Rd.
Merkert, Geo. L.....1412 E. 24th St.
Smith, Margaret I.....2627 Chicago Ave.

Rochester
Broders, A. C.....Mayo Clinic
Kernohan, J. W.....Mayo Clinic
MacCarty, Wm. C.....Mayo Clinic
Magath, Thos. B.....Mayo Clinic
Robertson, H. E.....Mayo Clinic
Rosenow, E. C.....Mayo Clinic
Sanford, Arthur H.....Mayo Clinic
Wellbrock, Wm. L. A.....Mayo Clinic
Wilson, Louis B.....Mayo Foundation

St. Cloud
Stangl, Fred H.....101, 7th Ave., S.

St. Paul
Ikeda, Kano.....125 W. College Ave.
Noble, John Franklin.....Ancker Hospital

MISSISSIPPI

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NAME — ADDRESS

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MISSOURI

Columbia
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Jefferson City
Adams, C. F.....Mo. State Board of Health

Kansas City
Duncan, Ralph Emerson.....306 E. 12th St.
Hall, Frank J.....306 E. 12th St.
Helwig, Ferdinand C.....St. Luke's Hospital
Johnson, Emsley T.....St. Joseph Hospital
Kerr, Russell W....Kansas City General Hosp.
Koritschoner, Robt.....4949 Rockhill Rd.
Narr, Frederick C.....Research Hospital
Stewart, Edward L.....1115 Grand Ave.
Trimble, Wm. K.....1103 Grand Ave.

St. Louis
Allen, Hollis N.....634 N. Grand Blvd.
Buhman, Rudolph.....539 N. Grand Blvd.
Fleisher, Moyer S.....1402 S. Grand Blvd.
Gradwohl, R. B. H.....3514 Lucas Ave.
Gray, Samuel H.....Jewish Hospital
Harris, D. L.....508 N. Grand Blvd.
Ives, Geo.....3720 Washington Blvd.
Katz, Samuel D.....3720 Washington Blvd.
Klenk, Chas. L.....508 N. Grand Blvd.
McCordock, Howard A.....Washington Univ.
Portuondo, B. C.....1402 S. Grand Blvd.
Pote, Thomas B..Washington Univ. Med. Sch.
Roberts, John R.....1402 S. Grand Blvd.
Schery, Chas. Wm.....529 N. Whittier St.
Siebert, Walter J.....Washington Univ.
Thompson, Ralph L.....607 N. Grand Blvd.
Walsh, L. S. Newman.....5535 Delmar Blvd.

Springfield
Stone, Murray C.....200 E. Pershing St.

MONTANA

Butte
Peterson, Raymond F.....Murray Clinic

Great Falls
Hitchcock, E. D.....Great Falls Clinic
Walker, Thos. F.....503, 1st Ave., N.

NEBRASKA

Lincoln
Neely, J. Marshall.....816 Sharp Bldg.

Omaha
Eggers, Harold E..Univ. of Nebr., Coll. of Med.
Manning, E. T.....107 S. 17th St.
McCurdy, Thomas.....306 N. 14th St.
Moody, W. B.....105 S. 17th St.
Moran, C. S.....Creighton Univ. Sch. of Med.
Rubnitz, A. S.....107 S. 17th St.
Russum, B. Carl.....306 N. 14th St.
Tollman, James P.....42d and Dewey Ave.

NEVADA

Reno
Parsons, Lawrence.....235 W. 6th St.

NEW HAMPSHIRE

Hanover
Miller, Ralph E.....9 Downing Rd.

NEW JERSEY

Arlington
Gilman, C. M. B.....59 Seeley Ave.

Asbury Park
de Pons, Isabel S. C.....501 Grand Ave.
Pons, C. A.....501 Grand Ave.

Atlantic City
Kilduffe, Robt. A.....Atlantic City Hosp.

East Orange
Minier, Carl L.....25 N. Harrison St.

Elizabeth
Casilli, A. R.....618 Newark Ave.

Englewood
Halpern, Herman.....143 Engle St.

Greystone Park
Christian, Thos. B.....

Jersey City
Alter, Nicholas M.....410 Fairmount Ave.

Mount Holly
Viteri, Luis E.....13 Brainard St.

Newark
Antopol, Wm.....Beth Israel Hosp.
Brown, Lewis W.....160 Roseville Ave.
Echikson, Joseph I.....845 S. 12th St.
Gray, John W.....142 Clinton Ave.
Yaguda, Asher.....88 Clinton Ave.

Orange
Cline, Benj. F.....264 Central Ave.
Rose, Salvatore J.....242 Ivy Ct.

Paterson
Davis, A. Hobson.....Paterson General Hosp.
Kim, Gay B.....703 Main St.

Plainfield
Borow, Louis S.....934 Park Ave.

Teaneck
Markley, Luther A.....Holy Name Hospital

Toms River
Halbach, Robert McC.....802 Main St.

Trenton
Boughton, T. Harris.....446 Bellevue Ave.
Rogers, Wm. N.....1253 Brunswick Ave.

West Orange
Goldberg, Samuel A.....169 Gregory Ave.

NEW MEXICO

Albuquerque
Beam, M. P.....221 W. Central Ave.

NEW YORK

Albany
Clemmer, John J.....136 S. Lake Ave.
Gilbert, Ruth.....116 N. Allen St.
Horner, Henrietta Calhoun..171 S. Main Ave.
Klinck, Gustavus H., Jr.....Albany Med. Coll.
Steen, Harry M.....136 S. Lake Ave.
Wright, A. W.....Albany Med. Coll.

Auburn
Adams, George B.....141 Genesee St.

Batavia
Smith, Wm. Adams.....31 Thomas Ave.

Binghamton
Bergstrom, V. W.....Binghamton City Hosp.
Gregory, Hugh S.....Binghamton State Hosp.

Brooklyn
Baker, Margaret A.....437 Ovington Ave.
Black, F. A.....80 Hanson Pl.
Comeau, Berthold R.....Kings County Hosp.
Curphey, Theodore J.....480 Herkimer St.
Derby, Irving Marsh.....681 Clarkson Ave.
Fein, M. J.....50 Greene Ave.
Feinblatt, Henry M.....616 Carlton Ave.
Fink, Harold.....700 Ocean Ave.
Fradkin, William Z.....955 Eastern Pkwy.
Gralnick, Abraham.....119 Sumner Ave.
Grayzel, David M.....555 Prospect Pl.
Greeley, Horace.....140 Clinton St.
Halpert, Béla.....555 Prospect Pl.
Jacobson, Sheldon A.....460 Lefferts Ave.
Kantrowitz, Abraham R.....2717 Avenue J
Lederer, Max.....555 Prospect Pl.
Marten, M. Edward.....515 Ocean Ave.
Meyer, Leo M.....1814 Avenue J
Moitrier, Wm., Jr.....1219 Dean St.
Morrison, Maurice.....250 Ocean Pkwy.
Nidish, Edward H.....51 Clark St.
Polayes, Silik H.....425 Prospect Pl.
Wiener, Alexander S.....64 Portland Rd.

Buffalo
Bentz, Charles A.....126 W. Humboldt Pkwy.
Hanan, Ernest B.....462 Grider St.
Jacobs, William F.....408 Richmond Ave.
Rosedale, Raymond S.....276 Norwalk Ave.
Vaughan, Stuart L.....187 Linwood Ave.
Warwick, Margaret.....875 Lafayette Ave.
Williams, Herbert U.....30 Arlington Pl.

Central Islip
Trygstad, Reidar....Central Islip State Hosp.

Clifton Springs
Thomas, Walter S.....42 Kendall St.

Corning
Shafer, Rudolph J.....163 E. 1st St.

Corona
Penke, Madeline.....104-27, 41st Ave.

Cortland
Wall, Wm. A.....134 Homer Ave.

Elmira
Bleyer, Leo F.....555 E. Market St.
Munch, Otto Louis.....
.....Arnot-Ogden Memorial Hospital
Stuart, Anna M.....656 Park Pl.

Far Rockaway
Handelman-Kalashnikoff, Pauline.....
.....536 Beach 22d St.

Glens Falls
Maslon, Morris.....191 Glen St.

Ithaca
Hauenstein, B. F.....
.....Tompkins Co. Memorial Hospital

Jackson Heights
Angrist, Alfred.....37-35, 74th St.
Barland, Samuel.....37-35, 74th St.

Jamaica
Buxbaum, Edward J.....8711, 150th St.
Campbell, N. H. M.....89-18, 139th St.
Werne, Jacob.....82-53, 164th St.

Kings Park
Priestman, Gordon .....

Kingston
Taylor, James Spottiswood.....
.....City of Kingston Laboratory

Little Neck
Van Nostrand, Hobart S.....
.....45-13 Little Neck Pkwy.

Long Island City
Hala, Wm. W.....30-20, 29th St.

Marcy
Bower, George C.....Marcy State Hospital

Middletown
Kelly, Wm. E.....
.....Middletown State Homeopathic Hosp.

Newark
Baumgartner, E. A.....Newark State School

Newburgh
Wescott, A. M.....231 Liberty St.

New Rochelle
Brooks, Henry T.....35 Woodland Ave.

New York
Aronoff, Rosa.....Metropolitan Hospital
Aronson, Wm.....150 E. 182d St.
Block, Nathan.....2280 Andrews Ave.
Brown, Chester R.....150 W. 87th St.
Cocheu, Lindsley F.....205 E. 69th St.
Darlington, Charles G.....209 E. 23d St.
Dolgopol, Vera B.....131 W. 110th St.
Donnet, J. Victor.....57 W. 57th St.
DuBois, Phebe L.....150 E. 73d St.
Eggston, Andrew A.....653 Park Ave.
Ehrlich, Joseph C.....Lebanon Hospital
Elser, Wm. J.....525 E. 68th St.
Ewing, James.....2 W. 106th St.
Felsen, Joseph.....667 Madison Ave.
Ferraro, Louis R.....711 E. 230th St.
Foot, Nathan Chandler.....525 E. 68th St.
Fraser, Alexander.....153 W. 11th St.
Frosch, Herman L.....1882 Grand Concourse
Geiger, Jacob.....25 Central Park West
Gerber, Isadore E.....1 E. 100th St.
Gonzales, Thomas A.....160 Riverside Dr.
Graef, Irving.....477 First Ave.
Grauer, Frank.....226 W. 71st St.
Hadjopoulos, L. G.....6 E. 78th St.
Heitzmann, Louis.....38 W. 90th St.
Helpern, Milton.....1391 Madison Ave.
Hillman, Oliver S.....140 E. 54th St.
Hochman, Charles H....2715 Grand Concourse
Jaffe, Henry L.....1919 Madison Ave.
Jeffries, Ferdinand M.....18 E. 41st St.
Jerskey, Abraham.....100 E. 94th St.
Jessup, D. S. D.....411 W. 114th St.
Kaliski, David J.....70 E. 83d St.
Klemperer, Margit Freund.....
.....370 Central Park West
Klemperer, Paul.....370 Central Park West
Knox, Leila Charlton.....St. Luke's Hospital
Kopel, Moses.....1454 Grand Concourse
Larimore, L. D.....750 Riverside Dr.
Lefkowitz, Louis L.....1051 Tiffany St.
Levine, Jacob.....1345 Shakespeare Ave.
Lisa, James R.....New York City Hospital
MacNeal, W. J.....303 E. 20th St.
Manheims, Perry J.....27 W. 96th St.
McNeil, Archibald.....18 E. 41st St.
Meeker, Louise H.....303 E. 20th St.
Moolten, Sylvan E.....60 E. 96th St.
Olcott, Charles T.....1300 York Ave.
Perla, David.....
.....Montefiore Hosp. for Chronic Diseases
Pincus, Julius.....250 W. 75th St.
Price, Aaron S.....345 W. 50th St.
Rabson, S. Milton.....166 W. 72d St.
Rohdenburg, G. L.....111 E. 76th St.
Rosenthal, Nathan.....51 E. 90th St.
Rous, Peyton.....
..Rockefeller Institute for Medical Research
Rubinstein, Morris.....1475 Walton Ave.
Saccone, Andrea.....334 E. 116th St.
St. George, Armin V.....400 E. 29th St.
Seecof, David P.....1970 Daly Ave.
Shuster, Mitchell.....30 E. 40th St.
Silverman, I. Jerome...1475 Grand Concourse
Sondern, Frederic E.....24 W. 55th St.
Sophian, L. H.....428 W. 59th St.
Stanford, Addie D.....1 E. 105th St.
Stillman, Ralph G.....525 E. 68th St.
Taub, Jacob.....1574 Leland Ave.
Taylor, Ewing.....27 W. 44th St.
Thalhimer, Wm.....30 Beekman Pl.
Thro, William C.....1300 York Ave.
Wallerstein, Harry.....585 West End Ave.
Weintraub, Solomon.....240 E. 79th St.
Weiss, M. Arthur.....235 W. 76th St.
Whitcher, Burr R.....305 E. 20th St.

Ogdensburg
Porro, Francis W...A. Barton Hepburn Hosp.

Ossining
Gosline, Harold I.....275 Spring St.

Ozone Park
deVeer, J. Arnold.....101-32, 97th St.

Poughkeepsie
Carpenter, H. P...Hudson River State Hospital
Peckham, A. L.....Vassar Brothers Hosp.

Rochester
Brown, Herbert R.....224 Alexander St.
Gáspár, István A.....501 W. Main St.
Hawkins, William B.....260 Crittenden Blvd.
Kennedy, Robert P.....176 S. Goodman St.
Lindsay, Saml. T.....909 W. Main St.
O'Grady, Geo. W.....277 Alexander St.
Wright, Angus.....260 Crittenden Blvd.

Rye
Loder, M. M.....

Saranac Lake
Gardner, L. U.....7 Church St.

Schenectady
Kellert, Ellis.....Ellis Hospital

Syracuse
Ferguson, J. Howard.....309 S. McBride St.
Weiskotten, H. G.....309 S. McBride St.

NAME ADDRESS

Troy
Curry, A. Hazel.....Ford and Fonda Aves.
Curtis, Stephen H.....Leonard Hospital
Jacobsen, V. C.....51, 1st St.

Utica
Gallagher, C. D.....1676 Sunset Ave.
Russell, Clarence L.....1125 Court St.

Valhalla
Dalldorf, Gilbert J.....Grasslands Hospital
Springer, Joyce M.....Grasslands Hospital

Watertown
Walker, Thomas T.....11 Public Sq.

Westfield
Field, Cyrus W.....88 N. Portage St.

White Plains
Russell, Hollis K.....149 Greenridge Ave.

Woodhaven
Axelrad, Sol.....8614, 85th St.

Yonkers
Cook, Ward H.....Bureau of Laboratories
Weedon, Frederick R..Bureau of Laboratories

NORTH CAROLINA

Asheville
Crump, Curtis.....36 Grove St.

Chapel Hill
Bullitt, James B.....

Charlotte
Barret, Harvey P.....403 N. Tryon St.
Todd, Lester C.....403 N. Tryon St.

Durham
Baker, Roger D.....Duke Hospital
Byrnes, Thomas H.....Watts Hospital
Forbus, Wiley D.....Duke Hospital
Sprunt, Douglas H.....Duke Hospital

Wake Forest
Carpenter, C. C...Wake Forest School of Med.

Wilmington
Barefoot, Graham B.....404 N. 3d St.

Winston-Salem
Frost, Thomas T.....City Memorial Hospital

NORTH DAKOTA

Bismarck
Larson, L. W.....221, 5th St.

Grand Forks
Saiki, A. K.....Univ. of N. Dak. Med. Sch.

Minot
Breslich, Paul J.....Trinity Hospital

OHIO

Akron
Hathaway, Burr M.....Children's Hospital
Potter, Frederick C.....256 W. Cedar St.
Saylor, Edward L.....525 E. Market St.

Cincinnati
Faller, Albert.....19 W. 7th St.
Herzberg, Mortimer.....Jewish Hospital
Patterson, James N.....Univ. of Cincinnati
Zeek, Pearl M.....Cincinnati Gen. Hosp.

Cleveland
Dominguez, Rafael.....2272 S. Taylor Rd.
Goldblatt, Harry.....2085 Adelbert Rd.
Karsner, Howard T.....2085 Adelbert Rd.
Kline, Benjamin S.....1800 E. 105th St.
Moritz, Alan R.....2085 Adelbert Rd.
Rehbock, D. J.....Charity Hospital
Simon, Morris A.....
Institute of Path.....Western Reserve Univ.
Straus, Reuben.....Mt. Sinai Hospital
Young, Anna M.....1800 E. 105th St.

Columbus
Coons, J. J.....370 E. Town St.
Fidler, Roswell S.....700 N. Park St.
Hoffman, Ralph W.....1542 W. 1st Ave.
Reinhart, Harry L.....
.....Starling-Loving University Hosp.
Shilling, Ellis Ray.....345 E. State St.

Dayton
Payne, Foy C.....201 S. Main St.
Simpson, Walter M.....134 Apple St.

Dover
Shaweker, Max.....Reeves Bank Bldg.

Elyria
Rosenzweig, Maurice.....630 E. River St.

Lorain
Donaldson, John B.....700 Broadway

Newark
Mitchell, Louis A.....28 E. Locust St.

Springfield
Oesterlin, Ernest J.....Springfield City Hosp.

Toledo
Crumrine, Ralph M.....
.....Lucas County General Hospital
Hindman, S. S.....316 Michigan St.
Ramsey, Thomas L.....225 Michigan St.
Rucker, James B.....630 W. Central Ave.
Schade, August H.....320 Michigan St.
Steinberg, Bernhard.....Toledo Hospital
Zbinden, Theodore.....706 Madison Ave.

Youngstown
Kramer, G. B.....Youngstown Hospital
Poling, R. B.....2218 Market St.

NAME ADDRESS

OKLAHOMA

Bartlesville
Chamberlin, E. M.....
.....Washington County Memorial Hosp.

Oklahoma City
Bailey, Wm. H.....300 W. 12th St.
Jeter, Hugh G.....1200 N. Walker St.
Keller, W. F.....119 N. Broadway

Tulsa
Hudson, Margaret G...411 Medical Arts Bldg.
Nauheim, H. S.....511 Medical Arts Bldg.
Nelson, I. A.....108 W. 6th St.
Venable, Sidney C.....1135 S. Quaker Ave.

OREGON

Eugene
Furrer, Emil D.....130 E. Broadway

Portland
Foskett, H. H.....1058 S.W. Taylor St.
Hunter, Warren C..Univ. of Oregon Med. Sch.
Lawrence Harriet J.....322 S.W. Alder St.
Manlove, Chas. H....Good Samaritan Hospital
Menne, Frank R....Univ. of Oregon Med. Sch.
Robertson, Thomas D.....3215 N.E. 15th Ave.

PENNSYLVANIA

Abington
Elman, John.....Abington Memorial Hosp.

Allentown
Milstead, L. C.....4th and Chew Sts.
Wenner, John J.....941 Hamilton St.

Altoona
Brumbaugh, A. S.....1312, 11th St.

Ardmore
Belk, William P.....Times Med. Bldg.

Bethlehem
Rothrock, Henry A., Jr....St. Luke's Hospital

Bryn Mawr
Strumia, Max M.....Bryn Mawr Hospital

Chester
Sickel, Geo. B.....525 Welsh St.

Conshohocken
Asnis, Eugene J.....The Hermitage

Danville
Hunt, Henry F.....

Easton
Gaines, Carl.....130 N. 3d St.
Zillessen, F. O.....256 Bushkill St.

Erie
Armstrong, E. L.....2d and State Sts.

Fortyfort
Janjigian, R. R.....1043 Wyoming Ave.

Gettysburg
Stewart, Henry.....

Greensburg
Mayhew, J. Morgan....532 W. Pittsburgh St.

Harrisburg
Denison, Charles M..Harrisburg State Hospital
Moffitt, George R.....Harrisburg Hospital
Van Horn, Herman H.....
.....3d St. and Polyclinic Ave.

Huntingdon
Reiners, Charles R.....741 Washington St.

Johnstown
Anderson, Horace B.....218 Franklin St.
McCloskey, B. J.....1020 Franklin St.

Kingston
Daley, D. F.....214 Chestnut St.
Wenner, Thos. J.....562 Wyoming Ave.

Lancaster
Keasbey, Louisa E.....Lancaster Gen. Hosp.

Lansdowne
Kennedy, Patrick J.....65 Fairview Ave.

Mayview
Fetterman, George H.....
.....Pittsburgh City Home and Hospitals

McKeesport
Menlowe, P. M.....1231 Evans Ave.
Sandblad, A. G.....1701 Union St.

New Brighton
McLaren, Harold J.....541, 11th Ave.

Norristown
Laubach, Charles A..Norristown State Hospital
Simpson, John C.....920 Swede St.

Philadelphia
Barthmaier, O. F.....2303 W. Lehigh Ave.
Bauer, John T.....8th and Spruce Sts.
Becker, Carl Emil.....1214 W. Hilton St.
Brown, Claude P.....1930 Chestnut St.
Bucher, Carl Joseph.....271 S. 15th St.
Case, Eugene Allen.....1818 Lombard St.
Clark, J. H.....3701 N. Broad St.
Corson-White, E. P.....1820 Pine St.
Crawford, Baxter L.....
.....Jefferson Med. Coll. and Hosp.
Custer, R. Philip.....4400 Spruce St.
de Rivas, Damaso.....1831 Chestnut St.
Fisher, H. Russell.....226 W. Gorgas Lane
Fowler, Kenneth.....Presbyterian Hospital
Fox, Herbert..Pepper Laboratory, Univ. of Pa.
Gault, Edwin S....Temple Univ. Sch. of Med.
Ginsburg, Gershon.....1936 N. 7th St.
Hastings, Willard S.....Jeanes Hosp.

NAME ADDRESS

Konzelmann, F. W....Broad and Ontario Sts.
Krumbhaar, E. B...Univ. of Pa. Sch. of Med.
Lieber, Marshall M.....
.....Jefferson Med. Coll. and Hospital
Long, Esmond R.....Henry Phipps Institute
Lucké, Balduin....Univ. of Pa. Sch. of Med.
Lynch, Frank B., Jr.....
.....Germantown Disp. and Hosp.
McCutcheon, Morton..Univ. of Pa. Sch. of Med.
McFarland, Joseph.....
.....McManes Laboratory, Univ. of Pa.
Meranze, David R.....Mt. Sinai Hosp.
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SATURDAY, OCTOBER 24, 1936

CLINICAL APPLICATION OF HORMONES OF ANTERIOR PITUITARY AND GONADS

Many important advances have been made by clinicians without help from laboratory workers. On other occasions new facts have been determined in the laboratory without aid from the clinicians. Confusion often results when clinicians attempt the premature application of studies begun in the laboratory and not carried to completion.

These remarks are prompted by the confusion now existing in the field of endocrinology, particularly with regard to knowledge of the hormones of the pituitary body and sex glands. This knowledge had its inception only a few years ago; its progress has been slow and uncertain, yet already it is receiving wide clinical application. Workers in research laboratories with every facility at their command have been able to isolate certain active principles, but even when exerting every effort to conduct a controlled experiment there have been disturbing variations in their results. For example, a pituitary fraction that had produced hypertrophy of testes of rats on repeated occasions suddenly and inexplicably produced atrophy of the testes. While disturbing, this was not serious—rats have no lawyers to sue for malpractice. However, workers in this laboratory report that it was, and is, besieged with requests for such extracts for injection into man, and that the clinicians in the community where the laboratory is situated are openly critical of the director of the laboratory because "with all that work being done right on our campus we must send elsewhere for extracts for patients." The director of the research laboratories of one of the largest American pharmaceutical houses is much upset by this insistence on the part of clinicians for extracts to be used in the treatment of patients. Recently he remarked, "I have repeatedly sent extracts marked 'for veterinary use only' to men who I thought had good judgment and later received letters reporting 'encouraging results in patients' and requesting an additional supply."

This is regrettable, of course, but perhaps the gentleman protests too much. It may be the boomerang effect of the policies of many commercial laboratories. They are in a highly competitive field wherein the organization that first gets its product into general use is most likely to profit handsomely. Therefore they equip personable and intelligent detail men with a satchel full of new hormones and send them forth to call on members of the medical profession. In many physicians they find men who may feel that they cannot permit the physician across the corridor to learn of new substances which can be injected hypodermically their wonders to perform while they stand by without a syringe or a new hormone. Thus these physicians demand the hormones as rapidly as they can be separated from the tissues, blood or excreta of animals or man and proceed to inject them into patients for a variety of conditions that have not responded to less dramatic therapy.

Another disturbing feature is that the medical literature is being filled with articles which are almost unanimously enthusiastic and which often give evidence of lack of critical consideration. When a clinician of large experience suggests that these glowing reports have not produced miracles in the treatment of his patients he is referred to as a "mossback" or a "nihilist." For example, it is somewhat difficult to find an article reporting the failure to produce descent of the testes by injection of gonadotropic substance, yet many such failures occur.

The existence of such a discrepancy between the brilliant laboratory observations and their clinical application does no particular harm to a clinician who is well grounded in fundamental knowledge and gifted with critical acumen. It does immeasurable harm to the clinician who relies on the written word as always representing the well digested opinion of an intelligent observer and who regards such opinions as accepted facts worthy of clinical application. A physician engaged in a busy practice who reads these glowing reports tends to undergo a transition from amazement to general interest, to acceptance, to clinical application. What he does not often see in print are the conservative reports or the reports of failure. What he never sees in print, for example, is the report of an experience like that of an endocrinologist who injected an extract into a 15 year old girl for dysmenorrhea. The size of her ovaries seemed normal before the injections were given; at the conclusion of the injections acute appendicitis developed and at operation the surgeon found bilateral cystic ovaries the size of oranges.

These reflections are not intended to inhibit chemical and biologic studies in accredited laboratories. Neither do they apply to the carefully controlled clinical application of accepted knowledge by competent observers; this is necessary. Rather are they intended (1) to emphasize that there is a great discrepancy between laboratory knowledge of the hormones and their clin-

ical application, (2) to suggest that for the present only those clinicians with facilities for critical study be encouraged to administer the newer endocrine preparations to patients and that these clinicians be urged to publish their negative as well as their positive results, and (3) to suggest that a large group of physicians not represented in either of the groups mentioned cease their undiscriminating injection of unknown substances into unsuspecting patients.

HYPOCHROMIC ANEMIA AND ALKALI THERAPY IN PEPTIC ULCER

Loss of blood for long periods usually leads to a slow depletion of iron stored in the body and frequently to the subsequent development of a hypochromic anemia. Obviously, successful treatment of the uncomplicated anemia depends on the arrest of the hemorrhages and on the replenishment of the reserve supply of iron. One of the frequent causes of this type of anemia is the chronic loss of blood resulting from peptic ulcer. Since one of the more common methods of treatment of this disease is the use of rather large amounts of alkaline powders daily and since the utilization of iron is known to be unfavorably affected by the presence of alkali in the upper part of the gastro-intestinal tract,[1] questions arise regarding the possible prolongation of periods of anemia in patients with bleeding peptic ulcer because of alkali therapy.

In a recent study at the University of California,[2] the results of an investigation dealing with the question of the utilization of iron during alkali therapy in patients with peptic ulcer have been described. Four adult male patients with a history of prolonged loss of blood from the gastro-intestinal tract and with an accompanying hypochromic anemia were subjected successively to three different types of treatment: a modified Sippy regimen, a period during which the diet was supplemented by iron in the form of iron-containing foods, as spinach, eggs or beef, and a period during which the alkali therapy was suspended entirely but the supplement of iron-rich foods was continued unchanged. In two of the patients, large doses of inorganic iron in the form of ferric ammonium citrate were subsequently administered. Although there was some variation in the response obtained from the various patients, the general trend of the results was consistent and unmistakable. During the period of unsupplemented alkali therapy there was no significant change in the hemoglobin content, the erythrocyte counts or the percentage of reticulocytes in the blood of the patients. Likewise there was little or no change in the pigment concentration of the blood following the addition of the iron-containing foods to the diet, even though the amounts given were sufficient to satisfy the daily requirement of normal adults. There was a slight but consistent increase in the number of erythrocytes in the blood, however, which the authors attribute to the absorption from the food ingested of some substance necessary for the formation of cell stroma or for the maturation of erythrocytes. In contrast to these results, the cessation of alkali therapy was followed promptly by a significant reticulosis and a subsequent increase in the concentration of hemoglobin and cells in the blood. In the two cases treated with large doses of inorganic iron, further increases in cells and pigment toward normal values were observed. These results appear to warrant the conclusion that the administration of alkali to patients with hypochromic anemia due to prolonged loss of blood from peptic ulcers interferes with the utilization of dietary iron for hemoglobin formation and thus delays recovery from the anemia.

The foregoing investigation emphasizes anew the importance of normal gastric acidity in providing a favorable environment for the proper utilization of dietary iron for the formation of hemoglobin. Other examples are well known, such as the impairment of iron utilization in patients with achlorhydria[3] and in experimental animals in which total gastrectomies have been performed.[4]

From a practical standpoint the study indicates that patients given alkali therapy for peptic ulcer complicated by an iron deficiency anemia will remain anemic until alkalinization is discontinued or until large amounts of iron are administered. According to the California investigators the method of choice is to give large doses of inorganic iron, since many foods that are rich in iron favor a recurrence of peptic ulcer, particularly in the absence of alkali therapy.

THE SOVIET UNION REVERSES ITS STAND ON LEGALIZED ABORTION

On May 26 the Central Executive Committee and the Central Peoples' Health Committee of the Soviet Union published the draft of a new law prohibiting abortion except in the presence of stringent indications; thus it completely reversed its stand of 1920, when it legalized artificial abortion. With the interdiction of artificial abortion, except when the life or health of the woman is threatened, a number of measures calculated to lighten the burden of child bearing and of the rearing of large families were proposed. The number of available obstetric hospitals, beds, consultation stations and crèches were to be increased so as to make this service universally available. The new law likewise proposed to raise alimony fees, to make divorce more difficult

1. Mettier, S. R., and Minot, G. R.: The Effect of Iron on Blood Formation as Influenced by Changing the Acidity of the Gastroduodenal Contents in Certain Cases of Anemia, Am. J. M. Sc. **181**: 25 (Jan.) 1931.

2. Kellogg, Frederick, and Mettier, S. R.: Effect of Alkaline Therapy for Peptic Ulcer on Utilization of Dietary Iron in the Regeneration of Hemoglobin, Arch. Int. Med. **58**: 278 (Aug.) 1936.

3. Mettier, S. R.; Kellogg, Frederick, and Rinehart, J. F.: Chronic Idiopathic Hypochromic Anemia: Etiologic Relationship of Achlorhydria to the Anemia, with Special Reference to the Effect of Large Doses of Iron, Organic (Dietary) Iron, and of Predigested Food upon Formation of Erythrocytes, Am. J. M. Sc. **186**: 694 (Nov.) 1933.

4. Dragstedt, C. A.; Bradley, J. D., and Mead, F. B.: Effect of Iron on Hemoglobin Regeneration in Gastrectomized Dogs, Proc. Soc. Exper. Biol. & Med. **33**: 58 (Oct.) 1935.

and to encourage the rearing of large families. The legislative bodies responsible for the bill asked the people for a free and fearless discussion of the proposed legislation. Opponents of the bill, chiefly women, advanced a number of social reasons, such as the still existing lack of housing facilities, the difficulty in prosecuting study or work and rearing many children at the same time, the ill effect of oft repeated pregnancies on one's health and, last but not least, the encroachment on the woman's right to determine whether she chooses at a given moment to become a mother or not.

The attitude of the medical profession and in particular of the obstetricians and gynecologists is in sharp contrast to these views. The medical profession in the Soviet Union had an unusual opportunity to observe the harmful effects, both early and late, of artificial abortion. Prof. G. A. Baksht,[1] the head of the First Gynecologic-Obstetric Clinic of the Leningrad Medical Institute, states: "The accumulated experience since 1920 furnishes abundant proof that artificial abortion is a serious evil and that the operation, even when performed *lege artis,* leads to a number of injurious effects." Trauma and infection have always constituted a real danger in operative interference with the normal process of labor. The same holds true with even greater force in the case of artificial abortion. The organism of the woman in the first months of pregnancy has not acquired those protective properties which guarantee it a physiologic puerperium. In discussing the operative trauma, Baksht states that the incidence of perforation of the uterus amounted to from 0.01 to 0.11 per cent. This accident not infrequently calls for an immediate laparotomy in order to ascertain probable injury to the intestine, the urinary bladder or the mesentery. Occasionally the uterus has to be sacrificed in a young woman. According to Ulyanovsky (quoted by Baksht), tears of the internal os occurred in 10.5 per cent and led to cicatricial contractures and even to a complete atresia, or served as a portal of infection of the parametrium. Too energetic curettage of the uterine mucosa traumatizes the basal membrane, with the consequent atrophy and depression of the menstrual function.

While micro-organisms enter the uterine cavity after the fourth day in the normal puerperium, about the time of the formation of the protective granulation zone, bacteria were found to be present in the uterine cavity after an artificial abortion on the second day after the operation and their number rapidly increased on the third and fourth days. This is manifested clinically by the frequency of "mild" fever. The high incidence of postabortive fever (40 and 50 per cent according to Rusin) depends on the considerable number of repeated abortions with the attendant subinvolution and latent infection. Chronic pelvic infection was present in 12.8 per cent in a follow-up study of 1,500 cases of artificial abortion.

The extent of biologic trauma is rather difficult to estimate. The introduction of two new glands of internal secretion, the corpus luteum and the placenta, undoubtedly call for especial adaptation on the part of the rest of the endocrine-vegetative system. The effect of the sudden interruption of pregnancy must be to upset the new equilibrium and to lead to endocrine-vegetative upsets and to disturbance of the menstrual function and the libido. This is of particular significance when interrupting the first pregnancy in women with an asthenic-hypoplastic constitution. It tends to stabilize infantilism and result in sterility even in the absence of a pelvic infection. Artificial abortion is an important etiologic factor in extra-uterine pregnancy.

The advocates of the bill likewise stress the salutary effect they believe the new law will have on the relations of the sexes, on the irresponsible and frivolous attitude toward the sex problem and on the building of character in the growing generation.

The bill was passed, June 27.

1. Baksht, G. A.: Regarding the Prohibition of Abortion, Sovetskiy Vrachebnyy Zhurnal, June 1936, No. 12.

Current Comment

THE DECLINE OF TUBERCULOUS INFECTION

In the September issue of the *American Journal of Diseases of Children,* Beaven [1] discusses the results of tuberculin tests made on 4,982 children between 1 and 14 years of age admitted to the Children's Division of the Strong Memorial Hospital and Rochester Municipal Hospital during the years 1926 to 1934 inclusive. Four hundred and eighty of these children (9.6 per cent) had positive reactions, the majority being in the early age group. As has been frequently found elsewhere, the number having positive reactions to old tuberculin increases as age advances. The significance of the positive reaction is therefore greater in the younger child. Fifty-two per cent of all children from 1 to 5 years of age with a positive reaction to old tuberculin had clinical or roentgenologic evidence of tuberculosis. Similar evidence was present in only 41.2 per cent of the children from 6 to 14 years of age. A positive reaction to old tuberculin in a child appears approximately equal in the two sexes, but boys are more likely to succumb to the infection than are girls. In the series studied, tuberculous children without signs or symptoms of the disease had an incidence of 13.8 per cent of known exposure, while those with clinical or roentgenologic evidence of the disease had an incidence of known exposure of 38 per cent. The decline, and this is perhaps the most significant section of the report, in the proportion of children with positive reactions to old tuberculin during the course of this survey was 62 per cent. This decline in the incidence of tuberculous infection in children has not been accompanied by any change in the relative incidence of the disease. The

1. Beaven, P. W.: Extent and Nature of the Decline of Tuberculous Infection in Children, Am. J. Dis. Child. 52: 565 (Sept.) 1936.

studies suggest that in the last three or four years infection with the tubercle bacillus has been more likely to result in positive clinical or roentgenologic signs than earlier in the survey. During this period, however, the mortality among infected children has changed little if at all. Beaven's analysis furnished credible evidence that tuberculosis among children is decreasing rapidly. This result is apparently due to a lower rate of infected persons rather than to any attenuation in the virulence of the organism causing tuberculosis.

Association News

RADIO BROADCASTS

The American Medical Association and the National Broadcasting Company are presenting the second series of dramatized health broadcasts under the title Your Health. The first broadcast in the new series, the thirty-second dramatized cooperative broadcast under the title Your Health, was given October 13. The theme for 1936-1937 differs slightly from the topic in the first series, which was "medical emergencies and how they are met." The new series is built around the central idea that "100,000 American physicians in great cities and tiny villages, who are members of the American Medical Association and of county and state medical societies, stand ready, day and night, to serve the American people in sickness and in health."

The program will go out on the Blue network instead of the Red, as originally announced. The announcement cards that were sent out when the program was planned for the Red network can be changed simply by substituting the word "Blue" for "Red" where it occurs. Stations to which the program is available are as follows:

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WGAR—Cleveland
WLW—Cincinnati
WSAI—Cincinnati
WCKY—Cincinnati
WXYZ—Detroit
WENR—Chicago
WLS—Chicago
WTMJ—Milwaukee
WIBA—Madison
WHIO—Dayton
WIRE—Indianapolis
WOOD—Grand Rapids

West North Central States
KWK—St. Louis
WMT—Cedar Rapids
KSO—Des Moines
KOIL—Omaha-Council Bluffs
WREN—Kansas City
KSTP—Minneapolis-St. Paul
WEBC—Duluth-Superior
WDAY—Fargo
KFYR—Bismarck

South Atlantic States
WBAL—Baltimore
WMAL—Washington
WRVA—Richmond
WTAR—Norfolk
WFBC—Greenville, S. C.
WCSC—Charleston, S. C.
WPTF—Raleigh
WWNC—Asheville
WIS—Columbia
WJAX—Jacksonville
WFLA—Tampa
WSUN—Tampa
WIOD—Miami
WSB—Atlanta

East South Central States
WAVE—Louisville
WSM—Nashville
WMC—Memphis
WAPI—Birmingham
WJDX—Jackson

West South Central States
WSMB—New Orleans
KVOO—Tulsa
WFAA—Dallas-Fort Worth
WBAP—Dallas-Fort Worth
KTHS—Hot Springs
KTBS—Shreveport
KPRC—Houston
WOAI—San Antonio

Mountain States
KTAR—Phoenix
KGIR—Butte
KGHL—Billings
KLO—Ogden

Pacific States
KGO—San Francisco
KECA—Los Angeles
KFSD—San Diego
KEX—Portland, Ore.
KJR—Seattle
KGA—Spokane

Canada
CRCT—Toronto
CFCF—Montreal

Hawaii
KGU—Honolulu

The topics are announced monthly in advance in *Hygeia*, the Health Magazine, and three weeks in advance in each weekly issue of THE JOURNAL. The topics and speakers for the next three programs are as follows:

October 27. Help for the Hard of Hearing. W. W. Bauer, M.D.
November 3. Community Sanitation. Morris Fishbein, M.D.
November 10. Noise. Morris Fishbein, M.D.

The time of the broadcast is Tuesday afternoon at 5 o'clock eastern standard time (4 o'clock central time, 3 o'clock mountain time, 2 o'clock Pacific time).

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

Clinical Meeting.—The Gulf Coast Clinical Society held its first annual meeting in Mobile, October 16-17. The speakers included Drs. Leon J. Menville, New Orleans; John A. Lanford, New Orleans; Willis C. Campbell, Memphis; George R. Livermore, Memphis; Winchell McK. Craig, Rochester, Minn.; Fred H. Albee, New York; Raymond W. McNealy, Chicago; James S. McLester, Birmingham; Lloyd Noland, Birmingham; Louis A. Buie, Rochester, Minn.; Orion O. Feaster, St. Petersburg, Fla.; Harvey F. Garrison, Jackson, Miss., and Francis E. LeJeune, New Orleans. The Mobile County Medical Society was host at a banquet Friday evening; Dr. McLester gave the address. The society was organized early this year and is composed of physicians from Biloxi, Gulfport, Mobile and Pensacola.

ARKANSAS

Society News.—Dr. James Ogden, Fort Smith, discussed trachoma before the Sebastian County Medical Society recently. ——The Tenth Councilor District Medical Society was addressed at Fort Smith, September 15, among others, by Drs. Charles T. Chamberlain, Fort Smith, on "The Patient with Heart Disease as a Surgical Risk," and Harry Wilkins, Oklahoma City, "Practical Management of Craniocerebral Injuries."——At a meeting of the Arkansas County Medical Society in Stuttgart, September 8, the following members of the state hospital staff in Little Rock spoke: Drs. John Stathakis, North Little Rock, treatment of syphilis; Elizabeth D. Fletcher, San Antonio, Texas, history of insanity, and Alice C. Kolb, Little Rock, the problem of caring for the mentally abnormal.

CALIFORNIA

Dr. Dock Named Professor of Pathology.—Dr. William Dock, associate professor of medicine, Stanford University School of Medicine, San Francisco, has been appointed professor of pathology, effective September 1. Dr. Dock is a graduate of Rush Medical College, Chicago, and has been associated with the department of medicine at Stanford since 1926.

Southern California Medical Meeting.—The ninety-fifth semiannual meeting of the Southern California Medical Association will be held in Los Angeles, October 30-31. The following program will be presented:

Dr. John Edwin Kirkpatrick, Los Angeles, Immediate Repair of Divided Nerves and Tendons of the Hand.
Dr. Alvin G. Foord, Pasadena, Normal Hematologic Standards, with Discussion of Variations Due to Physiologic Changes.
Dr. Hermon C. Bumpus Jr., Pasadena, What May We Expect from the Treatment of Tumors of the Bladder?
Dr. Charles M. Taylor, Los Angeles, Proctology in General Medicine.
Dr. Elliott P. Joslin, Boston, Insulin Protaminate and the New Era in Diabetes.
Dr. Emil Bogen, Olive View, Medical Aspects of the Business Cycle.
Dr. Isaac Y. Olch, Los Angeles, Results of Surgical Treatment of Hyperparathyroidism.
Dr. Francis M. Smith, San Diego, Anemia as a Cause of Angina Pectoris.
Dr. Hans von Briesen, Los Angeles, General and Neurosurgical Consideration of the Cerebral Birth Palsies.
Dr. John B. Renshaw, Glendale, Gastroscopy as an Aid in the Diagnosis of Malignant Lesions of the Stomach.
Dr. William Benbow Thompson, Los Angeles, Cesarean Sections in Los Angeles County.
Dr. George Piness, Los Angeles, Allergic Study of Feather Protein.
Drs. Merrill W. Hollingsworth and John J. Montanus, Santa Ana, Relationship of Low Basal Metabolic Rates to Allergic Disease.

COLORADO

Society News.—The Mesa County Medical Society was addressed in Grand Junction, September 15, by Dr. Robert J. Groom, Grand Junction, on "Diarrheas in Infants."——The Medical Society of the City and County of Denver was addressed, October 6, by Drs. Gerrit Heusinkveld on obstetrics, and Bernard N. E. Cohn, the normal and pathologic physiology of joints.——The Colorado Hospital Association will hold its annual meeting at the University of Colorado School of Medicine and Hospitals, Denver, November 4.——Dr. George E. Rice, Pueblo, addressed the Pueblo County Medical Society,

October 6, on "The Approach to a Diagnosis in Thyroid Disease."——The Delta County Medical Society was addressed, October 2, by Dr. Albert C. McClanahan, Delta, on "Does Morphine Inhibit Intestinal Peristalsis?"

DELAWARE

Society News.—Dr. George H. Cross, Chester, Pa., discussed "Magnetic and Nonmagnetic Foreign Bodies in the Eye and Their Methods of Removal" before the New Castle County Medical Society in Wilmington, September 15.

GEORGIA

District Meeting.—The Fifth District Medical Society held its annual meeting at the Academy of Medicine, Atlanta, October 15. Drs. Benjamin H. Minchew, Waycross, and George A. Traylor, Augusta, president and president-elect, Medical Association of Georgia, attended the meeting. Papers were presented, among others, by Drs. Joseph Earle Moore, Baltimore, on "Management of the Wassermann-Fast Patient"; William A. Smith, Atlanta, "Quinine Treatment of Myotonia Congenita," and Joseph Yampolsky, Atlanta, "Use of Stovarsol and Stovarsol and Bismuth in the Treatment of Syphilis in Children."

Changes at Medical School.—Dr. Richard Torpin, clinical instructor in obstetrics and gynecology, Rush Medical College, Chicago, has been appointed associate professor of obstetrics and gynecology and chairman of the department at the University of Georgia School of Medicine, Augusta. Dr. Alfred P. Briggs, assistant professor of internal medicine, St. Louis University School of Medicine, St. Louis, has been named associate professor of biochemistry and of medicine.——Fourth year medical students at the university were required to assist in making physical examinations of newly enrolled students in the various units over the state during September, in accordance with an order by the board of regents.

ILLINOIS

Personal.—Dr. Bryan J. Carder, deputy health commissioner of Berwyn township for the past three years, has been appointed commissioner to fill the unexpired term of the late Dr. Edward J. Farrell.——Dr. Frederick A. Causey, assistant managing officer of the Chicago State Hospital, has been appointed acting managing officer of the Lincoln State School and Colony, Lincoln; Dr. Phillip S. Waters, Alton, managing officer of the Lincoln school, has been granted a leave of absence on account of illness.

Thirteen Per Cent Too Slow to Drive Fast.—Tests given to 4,271 persons at the Illinois State Fair in August show clearly that large numbers of people are not physiologically able to maneuver automobiles at high speeds under emergency conditions with the split-second skilfulness that must be employed to prevent accidents, according to the state department of health. The tests revealed that 13 per cent of the men and 33 per cent of the women required more than one-half second to apply the brakes on a car after the flash of a danger signal. In addition, the tests showed that a noticeably higher percentage of persons over 35 reacted slowly, about 20 per cent of the older and 12 per cent of the younger group requiring more than one-half second to apply the brakes. About one third of the men and two thirds of the women tested made poor scores on steering ability. The state department of health points out that the worst time of the year for traffic accidents in Illinois is usually in the last three months of the year. In 1935 there were 713 deaths during the last quarter, against 597, 518 and 506 in the third, second and first quarters respectively. To date this year, mortality from traffic accidents has been almost parallel with that of 1935, indicating that about 700 more persons will be killed in Illinois before January.

Chicago

Dr. Lewis Gives Bevan Lecture.—Dr. Dean DeWitt Lewis, professor of surgery, Johns Hopkins University School of Medicine, Baltimore, delivered the eighth annual Arthur Dean Bevan Lecture of the Chicago Surgical Society, October 2. His subject was "Endocrinology and Surgery."

Dr. Kanner Appointed to School of Dentistry.—Dr. Oscar Kanner, formerly of Vienna, has been appointed professor of general histology, bacteriology and pathology at Loyola University School of Dentistry (Chicago College of Dental Surgery). He succeeds the late Dr. Emanuel Fink. Dr. Kanner graduated in medicine at the University of Vienna in 1921. He came to the United States in 1927.

Large Gift to Wesley Hospital.—Securities valued at more than $1,000,000 were given to Wesley Memorial Hospital, October 14, by George Herbert Jones, formerly president of the Inland Steel Company. The money will be used to erect the first unit of a proposed new $5,000,000 group of hospital buildings at Chicago Avenue, Fairbanks Court and Superior Street, near Northwestern University's McKinlock Campus.

Personal.—Samuel J. Beck, Ph.D., recently of the department of psychiatry, Harvard Medical School and Boston Psychopathic Hospital, Boston, has been appointed in charge of the psychology laboratory in the department of psychiatry at Michael Reese Hospital.——Dr. Hugh Ernest Griffiths, London, and F. A. Lyon, secretary, Seamen's Hospital Society, Greenwich, England, will spend a few days in Chicago visiting various hospitals.

Symposium on Oxygen Therapy.—The Chicago Medical Society will devote its meeting, November 4, to a symposium on oxygen therapy with the following speakers:

Dr. Ford K. Hick, associate in medicine, University of Illinois, and on the staff of the Illinois Research Hospital, Physiology of Oxygen Want with Discussion of Symptoms.
J. I. Banash, consulting engineer, Accepted Methods of Administration to Assure Therapeutic Dosage.
Dr. M. Herbert Barker, associate in medicine, Northwestern University School of Medicine, Clinical Response to Oxygen Therapy.
Dr. Ralph M. Waters, professor of anesthesia, University of Wisconsin Medical School, Madison, Postoperative Use of Oxygen.
Dr. Robert W. Keeton, professor of medicine, University of Illinois College of Medicine, will open the discussion.

INDIANA

Society News.—The Dearborn-Ohio County Medical Society was addressed in Lawrenceburg, September 24, by Dr. Daniel J. Davies, Cincinnati, on rupture of the uterus.——At a meeting of the Montgomery County Medical Society in Crawfordsville, September 24, Dr. Foster J. Hudson, Indianapolis, discussed the care of new-born infants.——Dr. Charles O. McCormick, Indianapolis, addressed the Boone County Medical Society in Lebanon, September 15, on rectal ether oil analgesia in labor.——The Fountain-Warren County Medical Society was addressed in Kramer, October 1, by Dr. Donald C. McClelland, Lafayette, on treatment of cancer.——Dr. Hugh A. Cowing discussed insulin protaminate before the Delaware-Blackford County Medical Society in Muncie, September 29.

Public Health Conference.—The forty-second annual conference of Indiana health officers was held at the Jefferson Plaza Hotel, South Bend, October 5-6. Speakers included Walter S. Frisbie, Ph.B., chief, division of state cooperation, Federal Food and Drug Administration, Washington, D. C., on "Food and Drugs in Relation to Public Health"; Dr. Calvin C. Applewhite, U. S. Public Health Service, Chicago, "Full Time Local Health Departments," and Dr. Reginald M. Atwater, executive secretary, American Public Health Association, New York, "What Next?" A symposium on syphilis, including the following speakers, concluded the session: Drs. Arthur F. Weyerbacher, Indianapolis; Minor W. Miller, Evansville; Ernest O. Asher, New Augusta, and Alfred S. Giordano, South Bend.

IOWA

Personal.—George D. Stoddard, Ph.D., professor of psychology, State University of Iowa, Iowa City, and director of the Child Welfare Research Station, has been made dean of the Graduate College of the university, succeeding Carl E. Seashore, Sc.D. On the latter's retirement he was made dean emeritus.

Health Lectures for High School Students.—The Crawford County Medical Society is presenting a course in public health for all high school students in the county. A course of nine lectures, one for each month of the school year, has been arranged on a rotating schedule, so that each talk will be given to every high school during the school year. Fifty minutes of each period will be devoted to the lecture and ten minutes at the end of the period will be allowed for questions from the students. The society plans to make this an annual course. The program to be presented this year is as follows:

Dr. Henry D. Jones, Schleswig, Heart Diseases and How to Prevent Them.
Dr. Dora E. Kielhorn-Zarske, Charter Oak, Epidemic Contagious Diseases and Their Complications.
Dr. Thomas L. Vineyard, Dow City, Care of the Digestive Tract.
Dr. Edward M. Mark, Manilla, Kidney Infections in Young Adults.
Dr. Carl A. Soe, Manilla, Tuberculosis in High School Age Youth.
Dr. G. K. Fair, Denison, Immunizations That Are Successful.
Dr. Claudius L. Sievers, Denison, Functions and Dysfunctions of Our Ductless Glands.
Dr. Amandus H. Grau, Denison, Epidemic Infections of the Brain and Spinal Cord.
Dr. John James Duffy, Denison, Venereal Infections in the Male and Female.

Society News.—Drs. Hamilton Montgomery and Frederick A. Figi, Rochester, Minn., addressed the Decatur County Medical Society, September 22, on "Skin Carcinomas and Related Lesions."——At a meeting of the Pottawattamie County Medical Society, September 21, Dr. Charles H. Watkins, Rochester, Minn., spoke on "Blood Dyscrasias."——Dr. Elliott P. Joslin, Boston, will address the Linn County Medical Society, Cedar Rapids, October 27, on "Treatment of Diabetes."——Dr. Harry H. Lamb, Davenport, was elected president of the Iowa Association of Ophthalmology and Otolaryngology at its annual meeting in Marshalltown, September 16; the next annual session will be held in Des Moines.——A symposium on undulant fever was presented before the Boone-Story Medical Society, September 23, at Ames.——The Cerro Gordo County Medical Society was addressed in Mason City, October 13, by Drs. Hiram Winnett Orr, Lincoln, Neb., on "Treatment of Compound Fractures," and Draper L. Long, Mason City, "Indication and Methods of X-Ray Pelvimetry."——Dr. George B. Eusterman, Rochester, Minn., addressed the Clinton County Medical Society in Clinton, September 3, on diagnosis and therapy of gastroduodenal disorders, and Dr. Daniel L. Sexton, St. Louis, October 1, on endocrinology.——The speakers before the Dubuque County Medical Society in Dubuque, September 22, included Drs. Budd C. Corbus, Chicago, on "Intradermal Immunization in Gonorrheal Infections"; Earl C. Sage, Omaha, "Errors Made in Obstetrical Practice," and Frederick H. K. Schaaf, Minneapolis, "Liver Function and Differential Diagnosis of Jaundice.

MAINE

Personal.—Dr. John F. Shaw, who resigned as superintendent of Central Maine Sanatorium, Fairfield, in 1932, has been again named to the position to succeed Dr. Arthur Paul Wakefield.

MARYLAND

The Dohme Lectures.—Dr. Charles H. Kellaway, director, Walter and Eliza Hall Institute of Research in Pathology and Medicine, Melbourne, Australia, will deliver the Dohme Lectures at the Johns Hopkins University School of Medicine, Baltimore, November 5-7. The titles of these lectures are "Snake Venoms: Their Constitution and Therapeutic Applications," "The Peripheral Action of Snake Venoms" and "Snake Venoms and Immunity."

MICHIGAN

Graduate Instruction in Obstetrics.—The bureau of child hygiene and public health, state department of health, and the department of postgraduate medicine, University of Michigan Medical School, Ann Arbor, are cooperating in a graduate course on obstetrics now under way in Traverse City, Petoskey, Alpena and Grayling. Dr. Alexander M. Campbell, Grand Rapids, chairman of the maternal health committee of the state medical society, is presenting the lectures. Subjects include maternal and fetal mortality, antepartum care, toxemias of pregnancy, conduct of normal labor and postpartum care. These lectures, which will continue for six weeks, are a part of the state's social security program.

Michigan's Health in 1935.—With 51,051 deaths from all causes in 1935, Michigan had a mortality rate of 10.05 per thousand of population. Organic heart disease, with 9,578 deaths, again led the list of ten principal causes of death. Next in order was cancer with 5,187 deaths; apoplexy with 3,907 deaths; pneumonia, 3,805, and nephritis, 2,974 deaths. According to the state health department, these five causes occupied the same relative positions as in previous years. Coronary disease and angina pectoris replaced accidents, exclusive of automobile accidents, as the sixth major cause of death, with 2,352 deaths recorded in 1935. There were 2,161 deaths from accidents in the home, in occupations and in other pursuits where automobiles did not figure, the department pointed out. Tuberculosis continued to decrease; 2,045 deaths were recorded as compared with 2,199 in 1934. Automobile accidents appeared ninth on the list of leading causes of death, while diabetes remained in tenth place with a total of 1,230.

MINNESOTA

Illegal Practitioner Ordered to Leave State.—Francis Howard Punchard Sr., alias J. Francis Clark, following thirty-three days in the Minneapolis City and County Jail, pleaded guilty to a charge of practicing healing without a basic science certificate, October 5. He was given a suspended sentence of six months in the Minneapolis Workhouse, provided he left the state in one week and did not return for five years. Punchard, who is not licensed to practice medicine in any state, was arrested following an investigation of the state board of medical examiners, which disclosed that he had been posing as a skin and cancer specialist. Unable to furnish a bond of $2,000, he was placed in jail.

Society News.—Dr. Oscar O. Larsen, Detroit Lakes, was again elected president of the Northern Minnesota Medical Association at the annual meeting in Fergus Falls, August 31-September 1. Other officers are Drs. Emmett A. Heiberg, Fergus Falls, vice president, and John F. Norman, Crookston, secretary.——The Stearns-Benton County Medical Society was addressed in Sauk Center, September 17, by Drs. Joseph C. Michael and Olga S. Hansen, both of Minneapolis, on "Some Neuropsychiatric Considerations in Cases of Trauma—Accidental Injuries" and "Cardiac Disorders of Particular Interest to the General Practitioner."——Dr. Alexander E. Brown, Rochester, discussed jaundice before the Washington County Medical Society, September 8.——Dr. Richard H. Jaffé, Chicago, will address the Hennepin County Medical Society, Minneapolis, November 2, on "Diseases of the Reticulo-Endothelial System."

MISSISSIPPI

Society News.—At a meeting of the Winona District Medical Society in Winona, September 24, speakers included Drs. Wallace L. Chambers, Lexington, on Vincent's infection of the chest; J. H. Eugene Rosamond, Memphis, infantile paralysis, and Eugene J. Johnson, Memphis, local anesthetics in certain abdominal conditions.——At a meeting of the South Mississippi Medical Society in Laurel, September 11, the speakers included Drs. Charles J. Bloom, New Orleans, on pediatrics; Henry T. Simon, New Orleans, infantile paralysis from the orthopedic point of view; John Gould Gardner, Columbia, infection of the hand, and Henry G. McCormick and the Hon. Ellis Cooper, of Laurel, the legal use of the x-ray plate.——The Marshall County Medical Society has been organized with headquarters in Holly Springs. Officers are Drs. Curtis R. Senter, Byhalia, president; Ira B. Seale, Holly Springs, vice president, and Herbert S. Phillips, Holly Springs, secretary.

NEW JERSEY

"Pharmacy Internship" in New Jersey.—A recent amendment to the New Jersey pharmacy practice act has enabled the board of pharmacy to prescribe the conditions under which a pharmacy graduate must obtain the one year's practical experience required precedent to registration as a pharmacist. That experience must be obtained in an "Approved Training Pharmacy" which conforms to certain regulations promulgated by the board. A pharmacy desiring to be so classified must make application for registration as an "Approved Training Pharmacy," and the list of such pharmacies is to be revised annually. During his internship the pharmacy graduate must, under the supervision of a registered pharmacist, personally compound at least 600 prescriptions and take part in the sale of poisons at least sixty times. He must familiarize himself with the manufacture and wholesale distribution of drugs and must visit from three to five physicians "for the purpose of discussing the prescribing of U. S. P. and N. F. preparations." Complete records of pharmacy internship must be kept by the pharmacy intern and by his employer, in a book supplied by the board of pharmacy, and these records must be submitted to the board when the application is filed for registration as a pharmacist. The board rules prescribe in detail the activities in which a pharmacy graduate must engage during his internship and provide generally that he must keep abreast of developments in pharmacy by additional study, attendance on lectures, and in other designated ways.

NEW YORK

New Bulletin.—The Onondaga Medical Society and the Syracuse Academy of Medicine are publishing a joint bulletin, the first issue of which appeared in September.

Personal.—Dr. Alvah P. Maine, Webster, celebrated his ninetieth birthday September 21. Dr. Maine graduated from the University of Pennsylvania in 1870 and established his practice in Webster in 1878.

Cornerstone for New Medical Building.—President Roosevelt laid the cornerstone of the new building for the University of Syracuse School of Medicine, September 29. The building, which is being constructed as a WPA project at a cost of $1,250,909, will be completed next year. It is a unit in a medical center that now contains the City Hospital, Syracuse Memorial Hospital and the Syracuse Psychopathic Hospital.

New York City

Dr. Martland Reorganizes Department of Forensic Medicine.—The department of forensic medicine, New York University College of Medicine, has been reorganized under the direction of Dr. Harrison S. Martland, Newark. In addition to undergraduate work, the department has developed graduate instruction leading to the degree of doctor of medical science and short, intensive courses in specialized branches of medicolegal work. The Charles Norris Fellowship in Forensic Medicine has been established, which is open to candidates applying for work toward the degree. Dr. Martland succeeded the late Dr. Charles Norris as professor of forensic medicine in January 1936. The latter had held the position since the establishment of the department in 1933.

Lectures on the Art and Romance of Medicine.—The New York Academy of Medicine has opened a series of lectures to the public on "The Art and Romance of Medicine." Dr. Smith Ely Jelliffe gave the first lecture, October 8, on "The Historical Background of Psychiatry." Other lecturers will be:

Dr. Francis G. Benedict, director, Nutrition Laboratory, Carnegie Institution of Washington, Boston, November 12, The Physiological Chase of the Circus Elephant.
Dr. Charles R. Stockard, professor of anatomy, Cornell University Medical College, December 10, The Mechanisms of Heredity.
Dr. Karl Vogel, associate professor of clinical pathology, College of Physicians and Surgeons, Columbia University, January 14, Medicine at Sea in the Days of Sail.
Dr. Frederick Tilney, professor of neurology and neuro-anatomy at Columbia, February 11, The Evolution of the Human Brain.
Dr. Henry E. Sigerist, director, Institute of History of Medicine, Johns Hopkins University, Baltimore, March 11, The History of Medical History.
Dr. Victor G. Heiser, president, International Leprosy Association, April 8, The History of Leprosy.
Dr. Walter Timme, professor of clinical neurology at Columbia, May 13, The Story of the Glands of Internal Secretion.

OHIO

Course in Endocrinology.—The Mahoning County Medical Society is sponsoring a graduate course in endocrinology in Youngstown, consisting of ten lectures by D. Roy McCullagh, Ph.D., and Dr. Ernest Perry McCullagh, Cleveland. The series began September 23 to continue on succeeding Wednesday evenings.

Advisory Health Board.—With the appointment of Drs. Carl S. Mundy, Stanley D. Giffen and Paul M. Holmes, an advisory health board has been created for Toledo. It will act in a purely advisory capacity on all municipal health matters and confer with the city manager, the welfare director and the health commissioner on current problems of the health department.

Personal. — Dr. Chester W. Waggoner, Toledo, has been appointed a member of the state medical board.——Wilton Marion Krogman, Ph.D., Cleveland, associate professor of anthropology, Western Reserve University School of Medicine, has been awarded the $1,000 prize of the *Readers' Digest* for his article on "The Skeleton Speaks," giving an account of some of his medicolegal interpretations of crime.

Society News.—Dr. Justin M. Waugh, Cleveland, addressed the Hancock County Medical Society, Findlay, September 18, on "Deep Infections of the Neck."——At a meeting of the Ohio chapter of the American Physiotherapy Association in Cleveland, October 17, Dr. Rudolph S. Reich spoke on "Supracondylar Fractures of the Elbow," and Dr. Joseph L. Fetterman, "Cerebral Palsy." A clinic was held in the morning at Mount Sinai Hospital.——Dr. Max M. Peet, Ann Arbor, discussed "The Present Status of the Surgery of the Sympathetic Nervous System" before the Toledo Academy of Medicine, October 2.

Toledo Teachers Must Have Physical Examination.—In accordance with a recent ruling of the board of education, an annual health certificate will be required of all teachers and other employees of the Toledo public schools immediately prior to the opening of the schools for the fall term. Examination and health certificate forms will be furnished each teacher and these are to be filled out, signed and certified to by the examining physician, preferably the family practitioner. A code system will be used to keep the report confidential. This measure has been adopted as a safeguard to the health and efficiency of the individual teacher as well as a health protection to the school child, according to the *Bulletin* of the Toledo Academy of Medicine.

Health at Columbus. — Telegraphic reports to the U. S. Department of Commerce from eighty-six cities with a total population of 37 million, for the week ended October 10, indicate that the highest mortality rate (20.5) appeared for Columbus and that the rate for the group of cities was 11. The rate for Columbus for the corresponding week of 1935 was 11.7 and that for the group of cities 10.5. The annual rate for the eighty-six cities for the forty-one weeks of 1936 was 12.1, as compared with 11.4 for the corresponding period of 1935. Caution should be used in the interpretation of these weekly figures, as they fluctuate widely. The fact that a city is a hospital center for a large area or that it has a large Negro population may tend to increase the death rate.

PENNSYLVANIA

Hospital Seminar.—The seventh annual graduate medical seminar of the Easton Hospital, Easton, was presented, October 21. The speakers were Drs. Norman M. Keith, Rochester, Minn., on "The Action and Use of Diuretics"; Wallace M. Yater, Washington, D. C., "Arteriography in Peripheral Vascular Disease," and Walter E. Dandy, Baltimore, "Diagnosis and Treatment of Cranial Nerve Lesions."

Philadelphia

Hospital News.—The Skin and Cancer Hospital of Philadelphia has recently added two new wards of ten beds each for treatment of cancer, especially patients in advanced stages. ——The board of managers of the Germantown Dispensary and Hospital gave a garden party October 3 for inspection of the hospital and the newly opened building for research on respiratory diseases.

Society Aids in Medical Relief. — The Philadelphia County Medical Society will provide medical care to persons on relief for the period September 25-December 31, according to the *Weekly Roster and Medical Digest*. This action was acknowledged in a resolution adopted by the society following the announcement by the State Emergency Relief Board that it had abandoned medical relief service as of September 19. The members of the Philadelphia Association of Retail Druggists will cooperate with the medical society by donating their services and making only the lowest possible charge covering a portion of the ingredients and container. It was believed that, on U. S. P. remedies, this fee could be kept at a minimum of possibly 25 cents for each prescription. Persons on emergency relief needing medical care are urged to go to the physician of their choice. When unable to find a physician who will treat them free, they may telephone the office of the county medical society, who will give them a list of the cooperating physicians in their neighborhood. Under the society's plan, physicians have agreed to treat free only persons who at the time of their visits are on emergency relief and are not already receiving free treatment at a dispensary.

Pittsburgh

Pediatric Institute. — The second of a series of three pediatric institutes sponsored by the state department of health and the Medical Society of the State of Pennsylvania was held at the Allegheny General Hospital, Pittsburgh, October 14. The speakers were Drs. James K. Everhart on "Appraisal of the Child"; James L. Foster, "Gastro-Intestinal Disturbances and Infant Feeding," and Joseph S. Baird, "Contagious Diseases with Immunology." The last pediatric institute in the county will be held October 28 at the Western Pennsylvania Hospital.

PHILIPPINE ISLANDS

Dr. Calderon Retires.—Dr. Fernando Calderon y Roca has retired as dean of the University of the Philippines College of Medicine, director of the School of Hygiene and Public Health, head of the department of gynecology and director of the Philippine General Hospital. Dr. Calderon is 70 years old and was graduated from the University of Santo Tomas College of Medicine and Surgery, Manila, in 1891.

Lepers Demand Freedom.—Several hundred lepers broke out of San Lazaro Hospital in Manila, October 6, and marched through the streets to the presidential palace to protest against being held as "prisoners," the New York *Times* reported. They contended that persons suffering from tuberculosis were more dangerous to the public than those afflicted with leprosy. On the promise of the secretary to President Quezon, that he would present their views to the president, the lepers were taken back to the hospital.

Association Opposes Schools of Chiropody.—The council of the Philippine Islands Medical Association at a meeting in July approved a resolution protesting against a bill introduced in the national assembly "to regulate the practice of chiropody." By the resolution the council protested against

establishment of chiropody, declaring that there is no real demand for practice of chiropody and if there should be any future demand for treatment of ailments of the feet and legs "there is even now an adequate supply of qualified medical practitioners who, with more competence, can render such service." The resolution also expressed the opinion that official recognition of the practice of chiropody "will ultimately result in the exploitation of the credulous public through exaggerated claims, thereby resulting in actual harm and injury to the health and lives of our people."

GENERAL

The Military Surgeons' Meeting.—The forty-fourth annual convention of the Association of Military Surgeons of the United States will be held at the Hotel Book-Cadillac, Detroit, October 29-31, under the presidency of Dr. Charles M. Griffith, Washington, D. C., medical director, Veterans' Administration. The speakers will include:

Dr. Philip B. Matz, Washington, Diabetes Mellitus Among Veterans of the World War.
Dr. Frederick G. Buesser, Detroit, Treatment of Peptic Ulcer.
Dr. Frederick A. Coller, Ann Arbor, Gas Bacillus Infection in Civil Life.
Leigh C. Fairbank, D.D.S., Washington, Medical and Dental Liaison in the Military Forces.
Stanley W. Clark, D.D.S., Chicago, Recent Research in Local Anesthesia, with Reference to the Development of the Alkaline Solution.
Dr. William W. Hall, Mare Island, M. C., U. S. Navy, Active Immunization Against Tetanus with Tetanus Toxoid.
Dr. Irwin B. March, Mount Clemens, Mich., M. C., U. S. Army, Aviation Medicine.
Dr. George W. Crile, Cleveland, Eighteen Years After.

Acute Accidental Poisonings.—A study of the records of 298 persons insured in the industrial department of the Metropolitan Life Insurance Company who died of acute accidental poisoning during 1934-1935 reveals that ninety were children under 5 years of age, according to the *Statistical Bulletin*. The manner of poisoning was given on 84 per cent of the death records and may be roughly grouped into three classes: poisonous substances picked up and consumed by children; poisons mistaken for medicines and overdoses of medicines, and ignorant use of substitutes for alcohol and fluids mistaken for alcoholic beverages. Poisonous substances picked up and consumed by children were responsible for eighty-two deaths. Strychnine caused the deaths of thirteen children; drinking kerosene caused thirteen deaths, and, in addition, there were seven deaths from gasoline, benzine and other petroleum products. Mistaking poisonous drugs for medicines or overdoses of medicines containing poisons accounted for seventy-eight deaths. Veronal (barbital), luminal (phenobarbital), allonal (allylisopropylbarbituric acid and aminopyrine) and amytal led the list, with a total of fourteen deaths; mercury bichloride with nine deaths was next in order; lysol (saponated solution of cresol) caused six deaths; arsenic, acetanilid and paraldehyde with four deaths each were next in numerical importance. The bulletin offers suggestions and safeguards to educate the public in an effort to reduce these accidental deaths.

Radio Forum—Growth of the Child.—The American Academy of Pediatrics, the National Broadcasting Company and the National Congress of Parents and Teachers are cooperating in a radio forum on the growth and development of the child. Dr. Norman C. Wetzel, Babies' and Children's Hospital, Cleveland, is editor. The series, which opened October 21, will continue each week until May 19. For the next two months the program will be as follows:

Dr. George L. Streeter, director, department of embryology, Carnegie Institution of Washington, Baltimore, October 28, Prenatal Growth.
Dr. Harry Bakwin, assistant professor of pediatrics, New York University College of Medicine, November 4, Growth of Infants.
Dr. Horace Gray, clinical professor of medicine, Stanford University School of Medicine, San Francisco, November 11, Growth of the Adolescent.
Richard E. Scammon, LL.D., Distinguished Service Professor, Graduate Faculty, University of Minnesota, November 18, Growth of Organs.
Earnest A. Hooton, Ph.D., professor of anthropology, Harvard University, Cambridge, November 25, Our Ancestors.
Amos H. Hersh, Ph.D., associate professor of biology, Western Reserve University, Cleveland, December 2, Does Like Beget Like?
Dr. Harold C. Stuart, assistant professor of pediatrics and child hygiene, Harvard University Medical School, Boston, December 9, Measurements of Growth.
Dr. Alfred H. Washburn, associate professor of pediatrics, University of Colorado School of Medicine, Denver, December 16, Individual Variations in Infants and Children.
Elmer V. McCollum, Sc.D., professor of biochemistry, Johns Hopkins School of Hygiene and Public Health, Baltimore, December 23, Foods and Growth.
Dr. Samuel Z. Levine, professor of pediatrics, Cornell University Medical College, New York, December 30, Chemical Elements and Their Part in Body Growth.

These lectures are being given over the Blue network of the National Broadcasting Company every Wednesday afternoon at 4 o'clock, eastern standard time.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Sept. 8, 1936.

New Test for Estimating the Toxicity of Mineral Oils

The Manchester Committee on Cancer has just issued its report for 1935. Dr. C. C. Twort, director of the Cancer Research Laboratories, states that since the publication of the last report a new test has been devised for assessing the toxicity of mineral oils. Having found a simple method by which the approximate carcinogenicity of a mineral oil could be rapidly ascertained—by examination of its refractivity—they investigated how the animal cells reacted to oils and this brought the new test to light. The test shows not only the probable carcinogenicity of an oil but also its probable power of causing dermatitis. It is performed by injecting a few drops of oil into an animal and recovering it for examination as to its physical characteristics. The basic principle of the test is that if the oil is toxic the animal will alter its physical characteristics, while nontoxic oil remains unaltered. When the animal reacts against the toxic oil, a fall is produced in the refractive index roughly proportional to the carcinogenicity plus the dermaticity of the oil.

The following conclusions have been reached. 1. The fall in refractive index is proportional to the degree of unsaturation or dehydrogenation of the oil. 2. There is no change in the refractive index of such oils as medicinal liquid petrolatum, squalene (a highly unsaturated pure hydrocarbon oil obtained from the liver of the dogfish) and cylinder stocks, all of which cause little or no reaction in the skin of an animal when placed in contact with it. 3. The refractive index fall varies inversely as the viscosity of the original oil. 4. There is a definite correlation between fall of refractive index and carcinogenic potency, viscosity and refractivity. The practical importance of these researches lies in their bearing on "mule spinners' cancer" (cancer of the scrotum due to contact with the oil used for lubrication in their work). A noncarcinogenic oil can be selected for use.

Another line of research was investigation of the oily, tarry material recovered from soot emitted from the exhaust of high compression internal combustion engines. The soot contained about 3 per cent of this liquid material and when placed in contact with the skin of animals proved carcinogenic. The activity of this material was high—about that to be expected in view of the activity found by previous experiments on mineral oils cracked at different temperatures. It appears that at a certain critical temperature mineral oils, regardless of their actual carcinogenicity, can be brought by cracking to a more or less constant carcinogenicity.

Research at the Royal College of Surgeons

The annual report of Dr. Beattie, the conservator of the museum and director of research of the Royal College of Surgeons, contains reports of important researches carried out during the year.

THE NERVOUS FACTOR IN TRAUMATIC SHOCK

Mr. O'Shaugnessy and Dr. Slome have continued their investigations on traumatic shock. In previous work they concluded that some other factor than fluid loss and tissue toxins was necessary to account for the shock that follows severe trauma. They therefore investigated the nervous factor and showed that in the period during which there is a marked fall in blood pressure there are continuous discharges of nerve impulses from the traumatized area. These impulses have been photographed by means of a cathode ray oscillograph. Their

investigations are proceeding along the lines of determining the exact nerve endings from which these impulses arise and the factors inducing their production. They are also concerned with the exact level in the nervous system at which these impulses produce their depressor effect on blood pressure. They have taken as the criterion of the intensity of the shock the lowering of the blood pressure in the general circulation, which seems to be the only one at present available for quantitative study. Their experiments in blocking the impulses by means of spinal anesthesia have suggested a possible line of treatment for the shock condition.

THE TOXIC FACTOR IN INTESTINAL STRANGULATION

Mr. G. C. Knight and Dr. David Slome have investigated the toxic factor in intestinal strangulation. They demonstrated the presence of a toxin (which caused marked depression of blood pressure and even death when injected intravenously into a normal animal) in the peritoneal fluid surrounding nonviable loops, in the venous blood of the loops of all types, viable and nonviable, in the thoracic duct during absorption, and in the urine. Using loops that had been completely cleared of intestinal content by irrigation, they showed that the toxin arises within the wall of the strangulated segment and passes thence into the lumen and into the venous blood and lymphatics. It appears to be a new product formed as a direct result of strangulation and not a substance previously existing in the intestinal lumen, which has merely been absorbed. Whether it arises from metabolic changes or bacterial action is being investigated. It has been demonstrated within half an hour of the onset of strangulation. Further experiments have been performed in order to assess the importance of the return of the toxic substance to the general circulation following relief of the strangulated loop. In certain cases, even of a viable type, relief of the strangulation is accompanied by a marked fall in blood pressure, and occasionally death ensues. An attempt is being made to determine the factors that govern these phenomena. Some early experiments in man show that a similar depressor substance is present in high concentration in the dialysate of the urine of patients with intestinal strangulation, whereas the dialysate of normal urine has no effect on blood pressure or contains only a minute quantity of the substance. After a period of twelve hours a similar depressor substance has been found in the peritoneal fluid in human cases but could not be found before this period in five cases. This may be of significance, as the twelve hour period has been shown to be the critical time at which the mortality begins to rise from nothing to 30 per cent and thereafter to 60 or 80 per cent at the forty-eight hour period. Biologic tests with preparations of the isolated uterus and intestinal strips indicate that the toxic substance is different from histamine or acetylcholine.

NERVE GRAFTING

The late Dr. A. B. Duel stated that degenerated nerve grafts, taken either from the individual in whom the graft was placed or from another of the same species, was more efficacious than grafts not degenerated. Miss Hill and Mr. Bentley have completed a series of experiments which show that: 1. A nerve graft, whether autogenous or homogenous, will serve to bridge a nerve gap and allow a large number of axons to reach the distal segment. 2. There is no difference in the time of recovery of function between animals which have had fresh and which have had degenerated grafts. 3. The number of new growing axons that pass into the distal segment is determined by the amount of scar tissue formed at the junction of the nerve with the graft and the amount of scar tissue that has developed within the central end of the grafted nerve at the upper line of junction. They conclude that, to reduce the production of scar tissue to a minimum and thus obtain the best results, absolute approximation and almost exact equality of size of the cut ends of the graft and the nerve are essential.

PARIS

(From Our Regular Correspondent)

Sept. 12, 1936.

Recent Changes in Social Insurance Laws

Although the Social Insurance Law, when first enforced in 1930, was considered an ideal one by its proponents, a number of modifications have already been made. In the fall of 1935, a complete revision was legalized, but this practically revamped law did not go into effect until the spring of 1936, a delay which has caused much confusion. The law as it now stands is briefly as follows. Some recent (August 26) changes will be cited later.

RELATIONS BETWEEN THE INSURED AND THE SOCIAL INSURANCE AUTHORITIES

In addition to those employed in industrial pursuits who were obliged to be insured, those who work at home, commercial travelers, chauffeurs of all kinds of vehicles and others are now included. The right of an employee to decide whether he or she wishes to be insured is now suppressed; that is, optional insurance no longer exists except for those in agricultural pursuits.

On the employer is placed the responsibility of sending to the caisses or primary collecting and disbursement offices his own premiums and those of his employees.

Every pay day the employer deducts 3.5 per cent of the salary of each employee and, having added an equal amount, the premium thus collected must be forwarded within ten days to the nearest postoffice.

Social insurance does not include industrial accidents and diseases. According to the older law, the insured could receive an indemnity only during the first six months of an illness, but this has been changed so that after the lapse of two months, during which no indemnity is received, a new period begins so that indemnity can be given for a second six months if proof can be furnished that the insured is not cured, or the indemnity is granted until the termination of the illness, irrespective of the duration of the same.

The caisse or bureau must be notified now within three instead of six days after the beginning of an illness, in the form of a letter attached to the physician's certificate, thus greatly simplifying the former very complicated procedure.

The free choice of the medical attendant continues, thus differing from the system in some other countries in which only a physician appointed by the social insurance organization can treat a patient.

Great latitude is permitted in the way of prescribing drugs and apparatus, but attention is to be paid to using the less expensive of these.

No physician deals directly with the social insurance offices or caisses. He is paid by the patient, who is allowed a certain sum for each day of illness, or in case of operation the sum allowed is proportionate to the character of the intervention. Before the insured worker can receive any money from the caisses or offices, his or her certificate must be signed by the attending physician or surgeon.

A fee-table, arranged by the syndicats, or medical unions, governs the charges of the medical attendant.

If an insured wishes to become a hospital patient, he must enter an institution having a contract with the social insurance authorities. The patient must pay the difference between the price for hospital care demanded by the institution and that allowed by the caisses or insurance bureaus. The latter allowance, however, can never be higher than the minimum fee paid by patients admitted to public hospitals. This amounts to 42 francs ($2.50) a day. If the insured prefers a hospital which has no contract, he or she receive an indemnity equivalent only to that received for illness at home.

This applies also to maternity cases. The insured must be willing to permit a physician appointed by the caisses or bureaus to verify the diagnosis and the like, but this can be done only in the presence of the attending physician of the insured.

In case any prescription costs more than 25 francs ($1.75) or any special treatment is needed, the medical inspector must give his approval.

RELATIONS BETWEEN PHYSICIANS AND SOCIAL INSURANCE AUTHORITIES

1. Medical service. The caisses, or insurance bureaus, can make contracts with the medical syndicates or unions by which a fee-table for services rendered to the insured is agreed on.

2. Hospitalization. Every public and private hospital can make contracts with the social insurance authorities according to which they care for the insured at an agreed daily rate. As stated previously, if an assured worker chooses to enter a hospital not having such a contract, he or she is allowed only a sum equal to that paid if he or she remained at their domiciles.

The caisses or insurance bureaus allow certain amounts for daily care and also for medical attendance if the insured is in a contract hospital.

LATER MODIFICATIONS PUBLISHED AUGUST 30, 1936

1. Every French citizen, male or female, who works for one or more employers and earns less than 21,000 francs is obliged to become an insured according to the new law. (This annual sum was formerly lower, so that more workers are now included.)

2. If the insured cannot, after medical examination, resume his or her work six days after the onset of an illness, he can be indemnified up to a period of six months. This indemnity cannot be below 3 francs nor more than 22 francs ($1.50) per day.

Treatment of Acute Osteomyelitis of Adolescents

The question as to whether it is not better to operate on an acute osteomyelitis in adolescents at a late stage, when the process is well localized in the bone and the evidences of a generalized toxemia have subsided, was discussed at recent meetings of the Académie de chirurgie of Paris. The papers by Leveuf, who is an advocate of late operation, and of Sorrel and others, who opposed this point of view, have been referred to in previous letters.

The discussion was terminated at the June 17 meeting of the society by Leveuf himself. He stated that emergency operations on suppurative foci in general were being less often employed at present, and in place of this every effort is made to aid the resistance of the organism by nonoperative measures. The surgeon intervenes only when the pus is well localized, but this does not mean that no operation at all is to be performed. To place an inflamed limb at rest in a plaster splint as advocated by Boppe, another Parisian surgeon, greatly aids in recovery.

One encounters cases of acute osteomyelitis, termed the septicemic type, in which there is high fever, positive blood cultures and grave general symptoms, whereas the bone focus symptoms are minimal. No form of local treatment, even amputation, would be of any avail in such cases. Opposed to such hopeless cases, all other varieties are encountered in which it is impossible at the onset for the surgeon to ascertain the severity of the local infection. The operation must be one that is adapted to each individual case. It is still a debatable question as to whether an early trephining of the bone is of benefit or not. Certain recently published statistics would lead one to believe that it does more harm than good. Joint complications and secondary foci are observed twice as often after trephining as after simple incision of a subperiosteal abscess.

The operative indications in osteomyelitis are of two kinds: (*a*) to evacuate a subperiosteal abscess and (*b*) to treat the bony focus. The former ought not to be opened too early; one can wait for one or two weeks without danger. With the aid of roentgenography the formation of a sequestrum can be easily ascertained and operation for its removal performed. There are other cases which are less favorable. The fever returns, the limb is swollen and roentgenography reveals extensive lesions. Here an extensive resection of the diaphysis is indicated, according to Leveuf.

BERLIN

(From Our Regular Correspondent)

Aug. 24, 1936.

Heredity and Tuberculosis

Since ancient times it has been assumed that some etiologic factor based on heredity is present in tuberculosis. That view is justifiable. The heritability of a predisposition plays an important part in tuberculosis along with the danger of bacterial dissemination. This subject has been elaborated in Germany during the last few years. Münter, for example, on the basis of thoroughgoing familial examinations, has formulated tables of relationship. He came to the conclusion that a predisposition, namely, a predisposed pulmonary weakness toward tuberculosis and other infectious diseases, does exist, that it is in fact inherited and in all probability subject to the law of recessive hereditary transmission and in any case is compatible with the laws of recessive hereditary descent. Ickert,

Likelihood that a Child Will Become Tuberculous

	Percentage of Probability
1. Both parents healthy and untainted	5.3
2. Both parents healthy, siblings or grand siblings (of one spouse) tuberculous	6.0
3. Both parents healthy, one parent of one spouse tuberculous	6.5
4. Both parents healthy, one or more children already tuberculous	14.1
5. Both parents healthy, one or more children already tuberculous, siblings of the parents or parents of the spouses tuberculous	20.5
6. One parent tuberculous, without further defect, the other parent untainted	19.5
7. One parent tuberculous, otherwise as in group 6; in addition, other children already tuberculous	40.1
8. One parent tuberculous, otherwise as in group 6; in addition, siblings or grand siblings tuberculous	27.1
9. One parent tuberculous, otherwise as in group 6; in addition, one or both of this parent's parents tuberculous	39.1
10. Both parents tuberculous, together with additional taint from either side	58.7

a well known research worker on tuberculosis, has come to the same conclusion. In collaboration with Benze he has investigated, by means of genealogical research, the influence of tubercle bacilli and the individual human constitution on the tuberculous process. These authors assume that all tuberculous infection is ascribable to a heritable congenital predisposition, since practically every person who presents evidence of an established recessive hereditary transmission of this nature will become tuberculous. Nothing is stated, however, as to what course the disease will take, since this is dependent on secondary endogenic and exogenic factors. Whereas Münter assumes a nonspecific predisposition (based on a lack of pulmonary resistance to infections), Professor von Verschuer believes, on the basis of research on tuberculous twins undertaken in collaboration with Diehl, in the existence of a specific inherited predisposition toward tuberculosis. After observing the interrelation of the incidence of tuberculosis and environmental factors, von Verschuer and Diehl made the remarkable discovery that an identical behavior of tuberculosis cases pre-

senting extremely disparate environmental influences could be demonstrated only in enzygotic twins. Therefore, according to the sum of these observations, the hereditary predisposition is the crucial factor in the etiology of and subsequent course pursued by the tuberculosis.

Environmental influences are to be thought of also, but the eugenic factors are still important considerations in the campaign against tuberculosis. The German writers who have treated this subject find it desirable that persons with hereditary tendencies toward tuberculosis be restrained as far as is possible from contracting marriages. These writers are furthermore of the opinion that in any such case in which the prevention of offspring is unqualifiedly indicated the tuberculous person should be sterilized at his own request. The German legislation for prevention of hereditarily defective offspring should be extended so as to include persons who present progressive and advanced tuberculosis, those who present asocial and antisocial open tuberculosis, and any pair of tuberculous marriage partners. To judge the likelihood that a child of given parents will become tuberculous, Ickert and Benze have computed the accompanying "risk table."

Result of the Examination of Lupus Patients

During the year 1935, in the province of Thuringia, all persons known to be suffering from lupus and their relatives were subjected to a thorough examination. The result was recently published in the *Münchener medizinische Wochenschrift*. Since 456 patients were examined, the results are of particular interest. Of these 456 persons, 143 were men, 278 women and thirty-five children; thus, the number of women was nearly twice that of the men. The latter fact serves to corroborate previous statements with regard to a greater morbidity among females. The occupations most commonly represented by the patients were, among men, factory workers and laborers (twenty cases), artisans (twenty-three cases) and small independent tradesmen (thirty-two cases). There were, however, only one teacher and one waiter among the male patients. Of the women the vast majority (206 of 278) were housewives, young women living at home and domestic servants; next, at a great distance, followed factory workers (twenty-nine cases). The figures for other occupational groups were insignificant.

Of the 456 lupus patients, eighty presented tuberculous alterations of the lungs; this group was composed of thirty men, forty-four women and six children. Tuberculosis other than pulmonary was found in nine patients.

In addition, 651 relatives of the lupus sufferers were examined; sixty-eight of these presented pathologic tuberculous alterations of the lungs (including two cases of pneumoconiosis) or tuberculosis at some other site. Of the sixty-eight relatives fourteen were found to present open tuberculosis and in five of these cases the disease was detected for the first time by this examination, the other nine cases being previously known to the antituberculosis centers. The outcome of this examination suggests once more the need for roentgenologic pulmonary examinations of all lupus patients and their relatives.

Dental Caries in Prehistoric Man

Dental caries is discussed by M. H. Baege in an extensive treatise on the diseases of prehistoric man. To the men of the paleolithic age dental caries was still unknown. This refers, to be sure, only to European relics of the Old Stone age. Paleolithic specimens in Africa show that dental caries had already appeared in that continent. The first European evidence that relates to the disease belongs to the mesolithic age. In the succeeding epoch dental caries seems to have increased steadily. In the neolithic period of Egypt dental caries appears still to have been a disease of rare occurrence. In later ages and especially during the period of Roman domination the incidence of the disease increased rapidly, however. From the material in hand to date it may be assumed that dental caries was still unknown to paleolithic man. The disease makes its initial appearance in the mesolithic age, occurring at first sporadically and then with ever greater frequency. By the close of the neolithic period the form of the caries approaches that of the modern disease. It may accordingly be said that the first appearance of dental caries coincides with the beginnings of human civilization. What has been said of caries is equally true of rachitis and is apparently likewise applicable to tuberculosis. With the exception of the men of the earliest paleolithic times, prehistoric man would seem according to the evidence not to have possessed that robust constitution which is popularly attributed to him.

VIENNA

(From Our Regular Correspondent)

Sept. 10, 1936.

Death of Prof. Julius Tandler

A few days ago the news reached Vienna that Prof. Dr. Julius Tandler, former director of the First Faculty of Anatomy in Vienna and former head of the local bureau of health, had died suddenly in Moscow. This news brought a sense of keen bereavement. His was an interesting career, not devoid of a certain element of tragedy. Born in the neighborhood of Vienna in the year 1869, the eldest of numerous children of a wretchedly poor family, Tandler attended the lower schools and the university in Vienna, graduating from the latter in 1895. He then immediately took up the study of anatomy, since three years previously he had been chosen by Professor Dr. Zuckerkandl, the head of the Faculty of Anatomy, as a demonstrator. One year later he became assistant at this institution; by 1899 he was a docent. As Zuckerkandl declined in health, Tandler, who attained professorial rank in 1903, came to substitute for him both as lecturer and as examiner. After Zuckerkandl's death, Tandler was selected and appointed his successor unico loco. He remained at the head of the First Faculty of Anatomy from 1910 to 1933.

During this time the university repeatedly entrusted to him the highest posts of honor; then in 1919 he became undersecretary of public health in the postwar Socialist ministry. In this capacity he rendered notable service. In 1920 he was appointed head of the city health department in Vienna and became reorganizer or, to put it more aptly, creator of a comprehensive public health system for the metropolis. Tandler's reputation as an anatomist was international. He was a distinguished teacher, brilliant lecturer and wit. His position afforded him abundant opportunity for scientific work and for the training of exceptional pupils. Tandler has enriched the science of anatomy with a vast amount of research. The following are only a few of his important contributions: a topographic anatomy of emergency operations that is indispensable to the practicing surgeon; fundamental work on the female pelvis, in collaboration with Halban; elucidation of important gynecologic questions; work on the surgery of the brain in collaboration with Professor Ranzi, and work in the field of dental anatomy, in which he was assisted by Professor Sicher. In addition, he became interested in the heart and published a notable work on cardiac embryology, and last but not least there is his great textbook of systematic anatomy. Tandler also edited the *Zeitschrift für Konstitutionslehre*, in which the latest results of research on the endocrines were worked up. Well known too are his "Anatomy for Artists" and his studies of infantilism and of the effect of castration on the organism. In connection with his investigations of the last named topic he repeatedly frequented the sect of the Skoptzi in Russia.

As head of the Vienna bureau of health, Tandler established a whole group of standardized procedures that have been studied by specialists the world over and adopted by many other municipalities. His principal concern as a public health official

was child welfare, since after the war there was a genuine danger of depopulation. Tandler organized a system of child welfare agencies that function in the interest of an individual infant even before birth: in Vienna welfare centers were set up for expectant mothers, for new-born infants and for nurslings; the school children were kept under careful control by skilled physicians and nurses, school dental clinics were instituted as well as centers for examination of the eyes, and tuberculosis was attacked on a large scale by the construction of amazingly large numbers of sanitary, sunny dwellings. As a result of Tandler's initiative, Vienna came to possess some 50,000 sanitary dwellings that were rented to the poorer classes of the population. Sports and physical culture also found in Tandler an ardent advocate. His activities brought him into contact with questions of population policy, by which his destiny was further influenced. His success as an organizer of systematic public hygiene resulted in his being called to China to organize the public health activities there. This invitation he gladly accepted, since in Vienna he had had certain differences with his friends over questions of policy. He was not involved in the political revolution that took place in Austria in 1934, as he had been absent from Vienna since 1932 and he was completely exonerated when the legal proceedings against the socialist régime were instituted. In 1933 he was dismissed from his post of professor of anatomy. Thereafter he made his home in China, whence he was called to Russia, as he had been called to China, to organize the public health service. He also managed to interpolate extensive lecture tours in Russia, Japan and North America. In the midst of his activity this distinguished man was carried off by a heart attack.

ITALY

(From Our Regular Correspondent)

Aug. 15, 1936.

Physiology of Aviation at Great Altitudes

Prof. Carlo Foà, regular professor of physiology at Milan University, in a lecture recently delivered before the physicians of the army spoke on physiology of aviation at great altitudes. The resistance that the atmosphere offers to moving airplanes increases in proportion to the square of the speed of the machine. The studies made on physiology of aviation at great altitudes were preceded by studies on the life of men at the highest spots in the Alps. The methods used in these studies were those of Angelo Mosso and, more recently, those in which chambers for decompression of air are used. In these chambers it is possible to produce, by means of suction pumps, a progressive decompression of the air, which corresponds to the different altitudes as the ship ascends.

Professor Herlitzka, instructor in physiology at Turin University, in his experimental studies on the subject, brought rarefaction of the air to a minimal pressure of 50 mm. of mercury, which corresponds to 19,000 meters above sea level. The figure is of importance because of the fact that above this altitude the alveoli of the lung are able to absorb no more gases than water vapor. In case of flying to such an altitude the body temperature would rise to such a height that the body fluids in contact with the atmosphere would boil. At an altitude of 10,000 meters above sea level the atmospheric pressure is reduced to one-fourth the normal atmospheric pressure. A given weight of air at 10,000 meters above sea level occupies four times as much volume as it would occupy at sea level. Therefore the quantity of oxygen contained in a given volume of air at this altitude is much less than that which is needed for respiration. Aviators at this altitude should breathe oxygen from an artificial supply. With this purpose in view the speaker advises the use of apparatus for the self administration of oxygen, that is, those with a closed circuit of the type of those which are now in use in the defense against war gases.

Professor Talenti of the Turin school found that the oxygenation of the blood in the lungs in breathing in an atmosphere of rarefied air is insufficient. When breathing is made under a pressure of 130 mm., which corresponds to 12,540 meters at sea level, it is diminished to two thirds in comparison with normal respiration. When respiration is made under a pressure of 115 mm., which corresponds to an altitude of 13,320 meters at sea level, the excitability of the nervous center of respiration is greatly lowered. It is necessary to recall frequently to the aviator his need of breathing oxygen, to which a small amount of carbon dioxide should be added. The speaker in his experiments with rarefied air reached a pressure of 107 mm. of mercury, which corresponds to 14,000 meters at sea level. The Italian aviator Donati reached sometime ago an altitude of 14,433 meters at sea level, which corresponds to a pressure of 96.5 mm. He was breathing a mixture of oxygen and carbon dioxide while flying. The amount of oxygen in the lungs of aviators who reach an altitude of 14,433 meters is smaller than that which existed when death of the aviators in the *Zenith* and of the alpinists at Everest took place. According to the speaker, the reasons why Donati was able to resist such altitudes were that the period of time in flying was short and that the muscular work performed by the aviator was as minimal as possible, in comparison to that performed by the former researchers. Professor Herlitzka says that flying can be indefinitely prolonged if it is made up to an altitude of 12,000 meters above sea level, provided the aviator's respiratory apparatus is protected against the ambient air and the aviator breathes a mixture of oxygen and carbon dioxide. If aviation is performed in the stratosphere, that is, 16,000 meters above sea level, the aviator should be entirely isolated from the external ambient air, either in an air-tight cabin or in individual apparatus. Such appliances, similar to those used in diving, are being developed in France, Spain and the United States.

Fracture of Neck of Femur

Professor Pieri, in a lecture recently delivered before the Società medica of Friuli, spoke on fractures of the femoral neck. He made a differentiation between fractures of the surgical neck of the femur and those of the anatomic neck of the femur and also between recent and old cases. Reduction of the wedge of the fracture followed by traction for two months is the preferable operation in fractures of the surgical neck (pretrochanteric fractures). Mobilization in old patients should be started, however, earlier than that. Curvilinear or oblique osteotomy is indicated in cases of long duration, not in old patients, in correcting the femoral deviation that usually remains under the form of coxa vara. In recent fractures of the anatomic neck, fibular nailing is indicated. In cases of long duration complicated by pseudarthrosis, it is advisable to reopen the fracture through an anterior incision, to make it bleed again, and then in the same operation to perform the fibular nailing.

Professor Devoto Is Dead

Prof. Luigi Devoto, a senator and the founder and first director of the Clinica del lavoro at Milan University, is dead. Professor Devoto graduated from Genoa University and was professor of medical pathology at Pavia University and director of Milan University. In both universities he established postgraduate courses in social and industrial diseases. He was surgeon general of the army during the war, founder of the journals *Il lavoro* and *La medicina del lavoro*, and president of the Società italiana di medicina del lavoro and president of the clinical institutes for postgraduate work at Milan. Professor Devoto published important articles on lead and mercury chronic poisoning, pellagra and several diseases. He also wrote books on physiologic chemistry, immunology, clinical

medicine, semeiology and medical technics. He was a collaborator to the following books: "Trattato italiano di patologia e di terapia," "Trattato di diagnostica e terapeutica per medici e studenti" and "Trattato sulla tubercolosi."

RIO DE JANEIRO

(From Our Regular Correspondent)

Aug. 15, 1936.

Uterine Hemorrhage in the New-Born

Dr. Barros Vianna, in a recent lecture before the Associação Paulista de Medicina, reported a case of uterine hemorrhage of two days' duration in a new-born infant. According to Halban, uterine hemorrhage in new-born infants is due to uterine changes caused by the presence of placental substances in the infant's blood. Jappert, in studies of such cases, found subepithelial hemorrhages with passage of blood into the uterus. Halban, also in studies of the internal genital organs of the infants who had not suffered from uterine hemorrhage, found uterine congestion and subepithelial hemorrhage. The uterine changes were not caused by ovarian secretions, because the ovaries in all cases were still in complete rest. Several of the hypotheses given to explain the uterine hemorrhage in infants cannot be supported. Ferraresi's hypothesis (stasis due to asphyxia) conflicts with the fact that cases of uterine hemorrhage have been observed even in infants delivered in cesarean section. That of Eroess (endometritis) is nullified by the results of Jappert's anatomopathologic studies of the uterus in that condition, in none of which was endometritis found. Schukwski's hypothesis (intestinal irritation causing congestion of the internal genitalia) is not correct because the conditions mentioned may coexist but there is no relation of cause and effect between them. Halban's theory of presence of placental substance in the infant's blood seems to be supported by the fact that Schlaclite found hyperemia, hemorrhage and prostatic secretion in anatomopathologic studies on internal genitalia of new-born infants. Vianna pointed out the benign evolution of uterine hemorrhages in infants, except in cases in which the hemorrhage is a symptom of septicemia or of hemorrhagic diathesis. He discussed the differential diagnosis of uterine hemorrhage in infants and said that infants suffering from the condition should not be given any treatment, not even vitamin C, because of the fact that the hemorrhage disappears spontaneously in a few days.

Therapeutic Applications of Vitamin C

Dr. Vicente Baptista, in a recent lecture before the Associação Paulista de Medicina, said that Szent-Györgyi succeeded in isolating from certain plants and from the adrenals a substance that was identified as vitamin C (cevitamic acid). The substance can be chemically synthesized. It has oxidation-reduction properties and an action in controlling organic diseases. The speaker reviewed the work performed by Stepp and his school in the medical clinic of Munich with relation to the action of vitamin C in controlling diseases of the blood. He reviewed also the literature in which satisfactory results are reported from the use of vitamin C in the treatment of gynecologic hemorrhages. According to the speaker, the treatment with vitamin C is indicated in pigmentations of the skin, dinitrophenol toxic cataract, internal medicine and neuropsychiatric and pediatric diseases. The speaker reported satisfactory results from vitamin C in a case of hemophilia in his practice. Several vitamin C preparations ready for clinical use are in the market from some foreign countries. In São Paulo a vitamin C preparation will be in the market in the near future.

Histology of Leprous Neuritis

Dr. Vincente Grieco, in a recent lecture before the Sociedade de Leprologia of São Paulo, reported results of studies of cases of leprous neuritis. He found, in the trunks of the nerves, alterations corresponding to tuberculous, pure nervous and tuberculoid forms of leprosy. The different types of neuritis that involve the trunks of the nerves are of an interstitial type. The granulomatous tissues first involve the nerve fiber and then cause its destruction. In tuberculous neuritis there is a great infiltration with presence of Virchow's vacuolized cells and of a large number of leprosy bacteria. In pure nervous neuritis there are few and small foci of infiltration containing lymphocytes. A consequent reaction of intense fibrosis with a process of calcification takes place. Leprosy bacteria are few. In neuritis of the tuberculoid type the infiltration is made by epithelial cells, lymphocytes and giant cells. Frequently there are processes of casefication and calcification. Leprosy bacteria in the infiltration is rarely found in this form of neuritis. The types of neuritis caused by involvement of the fibers at the level of the cutaneous lesions show, as a rule, leprous infiltration around the perineurium. Frequently the perineurium is entirely degenerated.

Marriages

Holland Stevenson, Pelham, N. Y., to Miss Katherine Elizabeth Brady of New Rochelle, in Trout River, August 25.

Donald Morrison Baldwin, Jacksonville, Fla., to Miss Rowena Virginia Mann of Lawrenceville, Ill., September 1.

Allen Marston Boyden, Portland, Ore., to Miss Margery French Davis of Ann Arbor, Mich., September 19.

Louis De Angelis to Miss Mae Carmela Cavalier, both of New Haven, Conn., in Richmond, Va., June 2.

Columbus Hershel Barnwell, Asheville, N. C., to Miss Esther Ireland of La Fayette, Ill., September 19.

L. Edward Giovine, Woodside, N. Y., to Miss Anne Sheridan of East Elmhurst, L. I., New York, July 25.

Robert Kempton Harvey, Kearney, N. J., to Miss Lydia Elizabeth Mesquita of Brooklyn, August 22.

William Joseph Doyle, Wilkes-Barre, Pa., to Miss Catherine Murray of Ashley, September 3.

Roger M. Minkel, Swea City, Iowa, to Miss Dorothy Doak of Iowa City in Fort Dodge, September 8.

Stephen J. Donovan, Detroit, to Miss Rachel Alice Greaves of Ann Arbor, Mich., September 7.

John Dutton Steele Jr. to Dr. Betsy Sprague Owen, both of Ann Arbor, Mich., July 2.

Lawrence T. Minish Jr., Frankfort, Ky., to Miss Virginia Duncan of Greenville, June 13.

Paul L. Boisvert, Geneva, N. Y., to Miss Martha M. Hancock of St. Louis, September 19.

Max Leopold Brodny, Boston, to Miss Jeannette Steinberg of Brookline, Mass., August 23.

Alexander W. Blumberg to Miss Ruth Tietbohl, both of Williamsport, Pa., August 22.

George Widener Knadler to Miss Caroline F. Feuchter, both of Philadelphia, recently.

Frank Moore McDonald to Miss Ellene Sage Elderkin, both of Akron, Ohio, June 20.

Frederic G. Perry, Plymouth, Ind., to Miss Sarah Ellen Gilworth of Warsaw, June 6.

Roy T. Agostini, Old Forge, Pa., to Miss Mary Ann Adonizio of Pittston, June 25.

Sterling J. Ritchey to Miss Josephine Johnson, both of Colfax, Iowa, September 21.

A. Burton Smith, Wyoming, Pa., to Miss Ida M. Parrish of Kingston, August 12.

Vincent T. Lathbury Jr., to Miss Faith C. Cony, both of Augusta, Maine, July 3.

Nathaniel Copulsky to Miss Edith Goldstein, both of Brooklyn, October 10.

Julius C. Goldner, New Orleans, to Miss Frances Rosenfeld of Omaha, June 9.

Henry Turkel, Cleveland, to Miss Dorothy Goldberg of Detroit, recently.

Roy W. Key to Miss Golda McLane, both of Sherman, Texas, June 20.

Grace O. Doane to Mr. Dante Pierce, both of Des Moines, September 10.

Daniel Meyers to Miss Nina Denny, both of Portland, Ore., July 4.

Deaths

John Winters Brannan, New York; Harvard University Medical School, Boston, 1878; member of the Medical Society of the State of New York and the Association of American Physicians; member and past president of the American Clinical and Climatological Association; consulting physician to the Bellevue Hospital, hospitals of the health department, Italian Hospital and Hospital for Ruptured and Crippled; president of the board of trustees of the Bellevue and Allied hospitals from 1902 to 1922 and also consulting physician; trustee of the New York Infirmary for Women and Children; aged 83; died, August 30, in the New York Polyclinic Medical School and Hospital, of heart disease and arteriosclerosis.

Frederick Smith Baird, Bay City, Mich.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1913; member of the Michigan State Medical Society and at one time councilor of the tenth district; past president and secretary of the Bay-Arenac-Gladwin-Iosco Counties Medical Society; served during the World War; on the staff of the Mercy Hospital; aged 48; died, August 2, of coronary thrombosis and myocarditis.

Edwin Clinton Anderson, Chattanooga, Tenn.; Eclectic Medical Institute, Cincinnati, 1880; Chattanooga Medical College, 1897; member of the Tennessee State Medical Association; past president of the East Tennessee Medical Association; for nine years held the chair of professor of pathology at the Chattanooga Medical College; aged 78; for many years on the staff of the Erlanger Hospital, where he died, August 14.

Clarence Woldemar Wille ⊕ Lakewood, Ohio; University of Pennsylvania Department of Medicine, Philadelphia, 1897; entered the U. S. Public Health Service and for ten years was assistant surgeon in various federal hospitals; formerly chief of the U. S. Marine Hospital, Cleveland; on the staff of the Lakewood City Hospital and consultant in surgery to the Veterans Administration; aged 62; died suddenly, July 1.

William Joseph Birkofer ⊕ Gothenburg, Neb.; State University of Iowa College of Medicine, Iowa City, 1897; member of the House of Delegates of the American Medical Association in 1910; formerly mayor of Gothenburg; at one time vice president of the Nebraska State Medical Association and secretary of the Dawson County Medical Society; aged 64; died, August 15, of diabetes mellitus and gangrene.

Richard Goodwin Wadsworth ⊕ Boston; Harvard University Medical School, Boston, 1900; member of the New England Obstetrical and Gynecological Society; fellow of the American College of Surgeons; for many years a member of the staff of the Free Hospital for Women, Brookline; secretary-treasurer of the Boston Medical Library; aged 62; died, July 4, at his summer home in Wareham, of thrombosis.

Willie Needham Blount, Laurel, Miss.; Louisville (Ky.) Medical College, 1894; member of the Mississippi State Medical Association; served during the World War; on the staff of the Laurel General Hospital; chief surgeon of the Gulf, Mobile and Northern Railroad Company; aged 63; died, August 27, in the Touro Infirmary, at New Orleans.

William Henry Burmeister ⊕ Chicago; University of Michigan Department of Medicine, Ann Arbor, 1907; served during the World War; formerly assistant professor of pathology at the University of Illinois College of Medicine; on the staff of St. Joseph's Hospital; aged 54; died, August 11, at his summer home in McHenry.

H. Max Mehlig, Bellingham, Wash.; Central College of Physicians and Surgeons, Indianapolis, 1897; member of the Washington State Medical Association and the Associated Anesthetists of the United States and Canada; for many years county coroner; secretary of the staff of St. Joseph's Hospital; aged 62; died, July 18.

Curtis Boyd Munger ⊕ Medical Director, Captain, U. S. Navy, Newport, R. I.; Cooper Medical College, San Francisco, 1903; fellow of the American College of Surgeons; entered the navy in 1905; aged 57; commanding officer of the United States Naval Hospital, where he died, October 3, of cerebral hemorrhage.

Robert Fritchey Roth, Westmont, N. J.; Hahnemann Medical College and Hospital of Philadelphia, 1927; member of the Medical Society of New Jersey; aged 33; died, July 29, in the West New Jersey Homeopathic Hospital, Camden, of chronic appendicitis, partial intestinal obstruction and incisional hernia.

Frederic Elmer Jenkins, Lake Como, Fla.; Bellevue Hospital Medical College, New York, 1885; at various times served in the medical corps of the national guard and reserve corps of the U. S. Army; served during the World War; aged 73; died, July 1, of bronchiectasis and nephritis.

Frank Butler Evans, Sandpoint, Idaho; Northwestern University Medical School, Chicago, 1904; formerly member of the state legislature of Nebraska and the senate of Idaho; county physician and member of the school board; aged 55; died, July 22, in Portland, Ore., of heart disease.

Meriwether Lewis Anderson, Richmond, Va.; Medical College of Virginia, Richmond, 1900; member of the Medical Society of Virginia; at one time demonstrator of obstetrics at his alma mater; served during the World War; aged 63; died, August 4, in St. Luke's Hospital.

Frederick William Hamlin, Rochester, N. Y.; New York Homeopathic Medical College and Hospital, 1888; at one time professor of obstetrics at his alma mater; formerly on the staff of the Flower Hospital, New York; aged 74; died, July 19, of chronic interstitial nephritis.

William Henry Barr ⊕ Philadelphia; Jefferson Medical College of Philadelphia, 1906; fellow of the American College of Surgeons; formerly chief surgeon of the Ashland (Pa.) State Hospital; aged 56; died, August 15, in Ocean City, N. J., of coronary sclerosis.

Richard M. Boyd ⊕ Aberdeen, Miss.; Memphis (Tenn.) Hospital Medical College, 1902; served during the World War; on the staff of the Aberdeen Hospital; aged 60; died, August 23, in the George Washington Hospital, Washington, D. C., of cerebral hemorrhage.

John R. Baldwin, Greenville, Miss. (licensed in Mississippi in 1904); member of the Mississippi State Medical Association; formerly city and county physician; aged 55; died, August 5, in the King's Daughters' Hospital, of chronic nephritis and myocarditis.

Fred Lyle Patterson, Coraopolis, Pa.; Jefferson Medical College of Philadelphia, 1907; member of the Medical Society of the State of Pennsylvania; aged 54; died, July 9, in the Ohio Valley General Hospital, McKees Rocks, of chronic endocarditis.

Samuel Ayres ⊕ Kansas City, Mo.; University of Louisville (Ky.) Medical Department, 1883; chief surgeon of the Kansas City Southern Railway; on the staff of St. Mary's Hospital; aged 78; died, August 7, in Rochester, Minn., of pneumonia.

John Gerald Byrne, Seattle; Northwestern University Medical School, Chicago, 1894; member of the Washington State Medical Association; served during the Spanish-American and World wars; aged 65; died, August 28, in the Providence Hospital.

Melvin G. Yocum, Mentone, Ind.; Eclectic Medical Institute, Cincinnati, 1890; member of the Indiana State Medical Association; past president of the Kosciusko County Medical Society; aged 70; died, July 7, of arteriosclerosis and diabetes mellitus.

James Livingstone Tower, Albany, N. Y.; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1913; member of the American Psychiatric Association; aged 45; died, July 10, of hypertensive heart disease and cerebral edema.

Arch Edward Baldwin, Seattle; M.B., University of Minnesota Medical School, Minneapolis, 1924; member of the Washington State Medical Association; aged 42; died, August 8, in the Providence Hospital, of Addison's disease.

Henry Braunlich ⊕ Davenport, Iowa; University of the City of New York Medical Department, 1883; aged 76; formerly on the staff of the Mercy Hospital, where he died, August 10, of uremia and hypertrophied prostate.

Truss Malcolm Brister ⊕ Bogalusa, La.; Memphis (Tenn.) Hospital Medical College, 1907; served during the World War; aged 54; on the staff of the Elizabeth Sullivan Memorial Hospital, where he died, August 22.

Charles A. Blair, Morenci, Mich.; Michigan College of Medicine and Surgery, Detroit, 1892; member of the Michigan State Medical Society; aged 77; died, August 4, in Hollywood, Calif., of carcinoma of the abdominal viscera.

John Reynolds Patton, Boston; University of Vermont College of Medicine, Burlington, 1897; connected with the Veterans Administration; aged 60; died, July 28, in the New England Baptist Hospital, of lobar pneumonia.

Elmer E. Ash ⊕ Goshen, Ind.; Kentucky School of Medicine, Louisville, 1885; past president of the Elkhart County Medical Society; aged 73; died, August 16, of carcinoma of the sigmoid and diabetes mellitus.

George Edgar Williams, Valdese, N. C.; State University of Iowa College of Medicine, Iowa City, 1897; served during the World War; aged 62; died, July 29, in Washington, D. C., following an operation for carcinoma.

Arthur Henry Boyden ⊕ Worcester, Mass.; Tufts College Medical School, Boston, 1909; fellow of the American College of Surgeons; on the staff of the Worcester City Hospital; aged 56; died, August 23.

Octavius Manlius Spencer, Chicago; Vanderbilt University School of Medicine, Nashville, Tenn., 1915; formerly a surgeon in the U. S. Public Health Service; aged 43; died, July 13, of heart disease.

Theodore Davis Adlerman, Brooklyn; Eclectic Medical College of the City of New York, 1892; on the staff of the Cumberland Hospital; aged 66; died, August 15, in Honolulu, Hawaii, of myocarditis.

Helen Genevieve Colby Bond, Concordia, Kan.; Kansas City (Mo.) Hahnemann Medical College, 1904; member of the Kansas Medical Society; aged 64; died, August 23, of carcinoma of the breast.

Perry Grant Ingersoll, Dunlap, Iowa; State University of Iowa College of Homeopathic Medicine, Iowa City, 1905; aged 52; died, July 10, in Omaha, Neb., of paralytic ileus and diabetes mellitus.

Julius S. Newland, San Diego, Calif.; Eclectic Medical Institute, Cincinnati, 1892; aged 91; died, July 2, in the San Diego County Hospital, of chronic myocarditis and cerebral hemorrhage.

Henry W. Vanderhoof, Colorado Springs, Colo.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1874; Chicago Medical College, 1885; aged 86; died, July 21, of pneumonia.

Guy Collins Anderson, Eads, Tenn.; Memphis Hospital Medical College, 1902; served during the World War; aged 56; died, August 21, in the Veterans Administration Facility, Memphis.

Alpheus Eli Adams, Newburgh, N. Y.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1879; aged 79; died, July 16, of carcinoma of the prostate.

William A. Burkhalter, Greenwood, Miss.; Tulane University of Louisiana Medical Department, New Orleans, 1889; aged 70; died, August 30, of bronchopneumonia and bronchiectasis.

Abraham Burack, Brockton, Mass.; Tufts College Medical School, Boston, 1912; member of the Massachusetts Medical Society; aged 46; died, August 23, at the Beth Israel Hospital.

Horace Van Nort, St. Louis; St. Louis Medical College, 1883; formerly a druggist; aged 80; died, July 11, in the St. Louis City Sanitarium, of heat prostration and arteriosclerosis.

Howard Jerome Goodrich, Delhi, N. Y.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1894; aged 66; died, July 7, of paralysis agitans.

John E. Anderson ⊕ Neshanic Station, N. J.; College of Physicians and Surgeons, Baltimore, 1884; aged 74; died, August 15, of arteriosclerosis and Buerger's disease.

Alonzo Wells Daniel, Nashville, Tenn.; Vanderbilt University School of Medicine, Nashville, 1936; aged 24; died suddenly, August 14, of a self-inflicted bullet wound.

J. J. O'Neill, Oshkosh, Wis.; Northwestern University Medical School, Chicago, 1895; aged 65; died, July 31, in the Mercy Hospital, of adenocarcinoma of the prostate.

Mary Parker Hopkins Brandrup, Mankato, Minn.; University of Minnesota Medical School, Minneapolis, 1901; aged 65; died, August 23, of carcinoma of the sigmoid.

Thomas Nathaniel Willis, Louisville, Ky.; Hospital College of Medicine, Louisville, 1878; aged 81; died, July 16, in Floyd Knobs, Ind., of myocarditis and nephritis.

Salvatore Auriemma, Weehawken, N. J.; Regia Università di Napoli Facoltà di Medicina e Chirurgia, Italy, 1908; aged 56; died, August 14, of arteriosclerosis.

Albert T. Baker, Retsil, Wash.; State University of Iowa College of Medicine, Iowa City, 1877; Civil War veteran; aged 89; died, July 10, of chronic nephritis.

Samuel Lancaster Pottinger, Louisville, Ky.; University of Louisville Medical Department, 1894; aged 66; was found dead in bed, July 15, of heat exhaustion.

Henry R. McMullan, Roane, Texas (registered by Texas State Board of Medical Examiners, under the Act of 1907); aged 62; died in July of myocarditis.

James Fuller Miller, Pocatello, Idaho; Tennessee Medical College, Knoxville, 1901; served during the World War; aged 59; died, July 18, of arteriosclerosis.

William Henry Baugh, Shoshone, Idaho; Missouri Medical College, St. Louis, 1891; aged 72; died, August 4, of diabetes mellitus and arteriosclerosis.

Jerome E. McLaughlin, Winchester, Idaho; University of Minnesota Medical School, Minneapolis, 1906; aged 65; died, July 20, of cerebral hemorrhage.

Edwin Everett Dougherty ⊕ Los Angeles; Indiana University School of Medicine, Indianapolis, 1910; aged 60; died, July 17, of chronic myocarditis.

Wilson Jesse Woodruff, Wapello, Iowa; College of Physicians and Surgeons, Keokuk, Iowa, 1885; aged 77; died, July 22, of carcinoma of the kidney.

Walter Barnett Wallace, Detroit; Detroit College of Medicine, 1895; aged 68; died suddenly, July 20, in St. Luke's Hospital, of cerebral hemorrhage.

Shigemitsu Itami, Philadelphia; Medical Faculty of the Osaka Imperial University, Osaka, Japan, 1897; aged 59; died, July 5, in Marblehead, Mass.

Harrison Bonham Hulse, Los Angeles; Indiana University School of Medicine, Indianapolis, 1912; aged 47; died, July 17, of cyanide poisoning.

Howard Allen, New Egypt, N. J.; College of Physicians and Surgeons, Baltimore, 1889; aged 70; died, August 22, of uremia and diabetes mellitus.

Benjamin F. Whittinghill, Du Bois, Ind. (licensed in Indiana in 1897); aged 91; died, July 5, of cardiorenal disease and fracture of the femur.

Adelaide Marklew Underwood, Pierson, Fla.; Woman's Medical College of Pennsylvania, Philadelphia, 1890; aged 87; died, July 14, of nephritis.

William Alfred Phillips, Paso Robles, Calif.; Western Reserve University Medical Department, Cleveland, 1888; aged 75; died, July 2.

Charles Ramage, Long Beach, Calif.; University of Edinburgh Faculty of Medicine, Scotland, 1887; aged 70; died, July 4, of tuberculosis.

Howard Higgins Hopkins, Fresno, Calif.; Cooper Medical College, San Francisco, 1904; aged 60; died, July 13, of cerebral hemorrhage.

Nicholas A. J. Urbanski, Buffalo; College of Physicians and Surgeons, Baltimore, 1910; aged 49; died, July 18, of coronary thrombosis.

Albert Mayfield Allen, Whitmire, S. C.; Southern Medical College, Atlanta, 1892; aged 69; died, August 24, of cardiovascular disease.

Frances E. Clarke Westergren, Boston; Boston University School of Medicine, 1892; aged 74; died, July 8, of coronary sclerosis.

James Halliday Williams, Cincinnati; Medical College of Ohio, Cincinnati, 1900; aged 59; died suddenly, July 12, of heart disease.

Hobart B. Steward ⊕ Coolidge, Ariz.; St. Louis University School of Medicine, 1927; aged 37; died, July 3, in Compton, Calif.

Jack Smiley, Salem, Va.; Medical College of Virginia, Richmond, 1926; aged 34; died, July 3, in a hospital at Roanoke.

Alexander Hotson, Park Hill, Ont., Canada; Western University Faculty of Medicine, London, 1889; aged 91; died, July 21.

George M. Glasgow, Cassville, Pa.; Jefferson Medical College of Philadelphia, 1891; aged 70; died, July 24, of angina pectoris.

John Madison Hall, Hazlehurst, Ga.; Southern Medical College, Atlanta, 1895; aged 60; died, July 25, of nephritis.

Charles Edward Keeler, Elderton, Pa.; Baltimore Medical College, 1897; aged 67; died, July 6, of acute endocarditis.

William Phillip Schirding, Palatine, Ill.; Rush Medical College, Chicago, 1894; aged 64; died suddenly, July 16.

Joseph L. Bell, Berkeley, Calif.; University of Louisville (Ky.) Medical Department, 1897; aged 66; died, July 15.

Alvin Judson Hurt, Chester, Va.; Chattanooga (Tenn.) Medical College, 1893; aged 72; died, July 22.

Helen Weyant, Toledo, Ohio (licensed in Ohio in 1896); aged 92; died, July 12.

Bureau of Investigation

BERNER'S TABLETS

A Reducing Nostrum Declared Fraudulent by the United States Postal Authorities

The Postmaster General has declared, on evidence satisfactory to him, the Re-Duso Sales Company, Berner Sales, Berner's Tablets, and their officers and agents as such at St. Louis engaged in conducting a scheme for obtaining money through the mails by means of false and fraudulent pretenses, representations and promises. By the authority vested in him, he closed the United States mails to these concerns and parties on July 8, 1936.

Carl Berner started the "Re-Duso" and "Berner's Tablets" business for the alleged treatment of obesity in December 1934 and was the sole owner. Re-Duso and Berner's Tablets were sold through newspaper solicitation, the copy being typical of the patter used by the exploiters of the obese. One of these advertisements reads as follows:

> "REDUCE!
>
> "SAFELY—no diet or exercise—no strong laxatives—try this modern method of losing weight without injuring your health—Berner's Tablets, 3450 Texas, GRand 9057. We deliver."

The overweight person who "fell for" the bait and communicated with Berner received a printed sheet headed "Berner's Tablets," describing the treatment, which read in part:

> "Berner's Tablets are a small chocolate-coated tablet about the size of an aspirin . . . They are safe—yet very effective . . . Berner's Tablets eliminate excess fat by reducing the appetite and giving a very gentle and mild laxative action, causing the most natural elimination of excess fat and waste matter accumulated in the system. Berner's Tablets simply offer you an economical way to do what modern doctors do in the treatment of obesity . . ."

No physicians, chemists or pharmacists were connected with the business, and Berner, the promoter, had no medical training, yet the advertising copy as set forth implied that "modern doctors" were in full accord with the Berner obesity fraud.

Post Office officials stated that chemical analysis of the "chocolate-coated tablets" revealed them to consist essentially of boric acid and cascara.

Such a preparation, when used as directed, would not reduce the weight of the user unless it did so by irritating and upsetting the normal digestive functions. Obesity is due to various causes, of which overeating and lack of exercise are not inconsequential factors. A person accustomed to overindulgence in food would not experience a sudden strengthening of will power by thrice daily swallowing a combination of boric acid and cascara.

In addition to the boric acid and cascara tablets, the promoter also furnished on request another preparation known as the "Little White Tablet," which contained, according to the postal officials, ½ grain of thyroid extract. The Little White Tablet was not a part of Berner's regular treatment but was a special concession to the purchasers of Berner's Tablets.

Prospective purchasers of obesity nostrums would do well to beware of all advertised remedies claiming to be harmless and requiring "no diet or exercise." If a preparation is harmless it is ineffective, and if it is powerful enough to cause reduction of body weight regardless of diet or exercise it must do so at the expense of health. Periodicals that carry obesity advertisements such as those for Berner's Tablets take an unfair advantage of reader confidence.

"THERMALAID"

In THE JOURNAL for October 3 appeared an article relative to "Thermalaid," in which it was pointed out that the *Kiwanis Magazine* was one of the publications in which the advertisement for this product had appeared "during the past few years." The secretary of the Kiwanis International writes to point out that the last time any advertising of this company appeared in *Kiwanis Magazine* was in March 1931, over five years ago. Since that date, *Kiwanis Magazine* has not accepted any advertising of this or similar character. THE JOURNAL regrets to have given the impression that *Kiwanis Magazine* is now carrying such advertising and wishes to congratulate the publishers on having adopted suitable censorship of medical advertising material.—ED.

PRINTER ASSUMES RESPONSIBILITY FOR ERROR IN KOCH PAMPHLET

A letter received from Mr. Hugh A. Kaumeier of the Sales Department of the American Printing Company, Detroit, states that the illustrations criticized in the article on William F. Koch (THE JOURNAL, Aug. 15, 1936) appeared as they did because of a printer's error for which his company assumes the responsibility. He states furthermore that Dr. Koch did not see a proof of the second run of this folder and left the proofreading to the printer.

Correspondence

INJECTION OF SUPRA-ORBITAL NERVE

To the Editor:—Francis C. Grant (THE JOURNAL, September 5, p. 772), in describing the technic for injection of the supra-orbital nerve, states that "the nasal branch is often difficult to block, for it may divide from the main trunk of the supra-orbital well within the bony canal."

Seeing that the supra-orbital nerve does not give off a nasal branch, I presume that the author is referring to the other division of the frontal nerve, the supra-trochlear, which does send a branch to the root of the nose and communicates with the infratrochlear branch of the nasal nerve. The supra-trochlear nerve could be reached (in supra-orbital block) only when the alcohol suffuses or is forced back to the parent stem —the frontal branch of the ophthalmic—which procedure, just as in the case of a too deep injection of the infra-orbital nerve, might damage some of the contents of the orbit, the cavity of which is traversed by both nerves—the frontal with its two branches, and the infra-orbital.

PENN G. SKILLERN, M.D., South Bend, Ind.

HEREDITARY RESISTANCE TO TUBERCULOSIS

To the Editor:—In THE JOURNAL, August 15, page 471, Miller and Rappaport have elaborated on the theory of inherited resistance to tuberculosis in a manner difficult to accept. Of course it is well known that in this country the mortality from tuberculosis varies greatly among certain race groups, being high among the colored races, particularly the Negro, and relatively low among Jews and Italians. It is also well known that the mortality is unusually high in isolated race groups, such as South Sea islanders, that have come for the first time in contact with tuberculous infection. It would thus appear that those races which have been in contact with civilization and its concomitant tuberculosis over the longest period of time would be more resistant to the disease. The authors, in explaining how this hereditary resistance is brought about, say that the resistance "has thus become progressively increased by the addition of acquired resistance through successive generations." This argument for the inheritance of acquired characteristics is a biologic concept always difficult to accept and, the authors themselves admit, would meet with prejudice.

To me, the most plausible concept has been the "survival of the fittest," and this is equally applicable to other diseases as well as to tuberculosis. It is common knowledge that isolated racial groups such as native Africans and Eskimos have in a short time died off in large numbers on first coming into contact with an infectious disease such as measles or tuberculosis. The survivors in these groups, who may be considered from this standpoint the fittest, represent the resistant remnant that lived to transmit to later generations their resis-

tance to the particular infection. The "survival of the fittest" theory may in the same way apply to other diseases such as syphilis, which is today far less virulent than it was during the sixteenth century.

The importance of the hereditary factor in allergy seems least impressive. In large urban populations there are just as many Negro as white children reacting to the tuberculin test, despite the fact that the mortality is from three to five times as great among the Negroes. This would suggest that the allergy is just as prevalent in the less resistant as in the more resistant group. In spite of the many arguments against hereditary resistance to tuberculosis, ample experimental evidence exists that animals such as turtles and rats are very resistant to the human tubercle bacillus. And, as was mentioned, the resistance of race groups to tuberculosis is also well known. The hereditary and constitutional factors contributing to this resistance remain a mystery. Some light is beginning to be shed in this direction by investigations of the relationship of the adrenal cortex and the spleen in the resistance to bacterial and other intoxications.

JULIUS KAUNITZ, M.D., New York.

Queries and Minor Notes

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HAY FEVER DUE TO RAGWEED SENSITIVITY

To the Editor:—I have a patient who, during the second week of August, developed for the first time typical seasonal attacks of hay fever and asthma. The attacks of asthma, which are more severe at night, are relieved only by epinephrine hypodermically, which has to be administered about every three hours in doses of from 0.3 to 0.4 mg. Tests for allergy have resulted in: For pollens: orchard grass 2 plus, wormwood 3 plus, June grass 2 plus, timothy 2 plus, red top 2 plus, Bermuda 3 plus, pigweed 2 plus, ragweed (short) 3 plus, ragweed (giant) 3 plus, goldenrod 1 plus, English plantain 1 plus, lambs' quarters 1 plus, marsh elder 1 plus. For epidermals: rabbit 1 plus, dog 1 plus. For inhalants: house dust 1 plus, pyrethrum 2 plus, tobacco 1 plus, kapok 1 plus. For foods: pork 1 plus, egg white 1 plus-minus, egg yolk 1 plus, beet 1 plus, spinach 1 plus, barley 1 plus, wheat 1 plus-minus, apple 1 plus, pear 1 plus, cherry 1 plus, hops 1 plus, kidney bean 1 plus, peanut 1 plus-minus, string bean 1 plus, pike 1 plus, tomato 1 plus-minus, okra 1 plus, halibut 1 plus. The history and the physical examinations of the patient, who is a young man, are essentially negative. The nasal passages and sinuses are normal except for the characteristic hay fever appearance of the nasal mucosa. The routine laboratory tests (urine, blood count, blood Wassermann and blood sugar) do not reveal any abnormal condition. Though the patient is allergic to several pollens, the ragweeds (short and giant) evidently represent the main factor, at least as far as the present seasonal condition is concerned. In planning a treatment, however, the sensitiveness of the patient to the late spring pollens has to be considered as a potential menace for future manifestations. I realize that in relation to the present season, owing to its lateness, there is very little to be expected from any desensitization procedure, and I am principally concerned with a plan of prevention for the next year. Under this respect your suggestions would be very much appreciated. By considering the severity of the case, are you in favor of a perennial treatment? For how long should that be safely carried on? Would it be advisable (1) to start with a ragweed mixture and then shift to a spring and fall mixture? (2) to begin with a mixture of the several pollens, to which the patient is allergic and to continue with it? (3) or to start with a mixture of the several pollens and to shift, next spring, to the ragweed mixture? The doubt in my mind is that treatment with a mixture of the several pollens to which the patient is sensitive would not result in the patient's getting enough of the ragweed extracts to be desensitized against the ragweed pollens responsible for the present clinical syndrome. Of course, the allergy of the patient to the epidermals and foods is also to be taken into account, especially during the season, for the purpose of eliminating all the possible contributing or aggravating elements. Please omit name.

M.D., Ohio.

ANSWER.—The main point in this case is that the patient's asthma and hay fever are almost certainly due to the pollens of short and giant ragweeds. Ragweeds pollinate in the Cleveland vicinity from about August 10 or 15 to approximately the end of September. As the season is over, there is no reason for further treatment this year, but for next year a definite plan of injections should be carried out. These may be started as late as May 1 but it would probably be better to begin about April 1.

Injections may be given about twice a week for a total of from twenty-five to thirty injections. The mixed ragweed extract should be purchased in bulk so that the dosages may be adjusted to suit the sensitivity of the patient. The strength of the injections should be increased from 35 to 50 per cent each time, if possible, until the hay fever season has started, and then reduced slightly; at the end of the season the top dose should be repeated every two weeks (perennial method of treatment) and gradually increased before the next season.

Regarding the other pollens (especially grasses) that gave positive skin tests, it is advisable to disregard them entirely until and unless symptoms develop during the grass hay fever season (about May 25 to the end of July); treatment for positive skin tests should never be given unless clinical symptoms occur. The patient has a "potential" grass hay fever; "potential" cases should be watched, not treated. The foods that gave positive tests should be avoided during the ragweed season and contact with animals should also be restricted at this time.

The question as to how long perennial treatment is necessary cannot be answered. It will depend on the patient. One who has only hay fever may take injections for three or four years, perhaps, and then stop for a year or more if symptoms are absent or slight; but if asthma also is present the injections should not be stopped so soon. The patient should be tested each year for ragweed pollens; when and if the skin tests become negative for these, the sensitivity is presumably much lessened or perhaps gone entirely.

HAGEDORN-JENSEN METHOD FOR DETERMINING BLOOD SUGAR

To the Editor:—Please describe the method of blood sugar determination by the Hagedorn-Jensen method.

T. K. LEWIS, M.D., Birmingham, Ala.

ANSWER.—The Hagedorn-Jensen method of blood sugar determination requires only 0.1 cc. of blood from the finger or lobe of the ear. A protein-free filtrate is obtained by using a colloidal solution of zinc hydroxide. The clear filtrate is treated with potassium ferricyanide, the unconsumed portion of which is titrated back with sodium thiosulfate. The reaction is:

$$2H_3Fe(CN)_6 + 2HI \rightarrow 2H_4Fe(CN)_6 + I_2$$

The ferricyanide is precipitated in the form of a zinc compound. All reagents must be free of iron.

For getting the filtrate: 1. Zinc sulfate, 0.45 per cent solution, to be made each week: Prepare a stock 45 per cent solution by adding 45 Gm. of sulfate to enough distilled water to make 100 cc. of solution. Add 1 cc. of this solution to about 75 cc. of distilled water in a 100 cc. volumetric flask, then dilute to 100 cc. 2. Tenth normal sodium hydroxide solution: Dilute 10 cc. of normal sodium hydroxide to 100 cc. with distilled water. This solution must be made each week.

For sugar determination: 1. Potassium ferricyanide solution: Dissolve 1.65 Gm. of potassium ferricyanide (recrystallized) and 10.6 Gm. of anhydrous sodium carbonate in about 800 cc. of distilled water in a 1,000 cc. volumetric flask; dilute to 1,000 cc. with distilled water. Keep in a brown bottle. 2. Zinc sulfate solution: Dissolve 10 Gm. of zinc sulfate and 50 Gm. of sodium chloride in enough distilled water to make a total of 160 cc. 3. Potassium iodide solution, 12.5 per cent: Dissolve 12.5 Gm. of potassium iodide in about 75 cc. of distilled water in a 100 cc. volumetric flask and dilute to 100 cc. with distilled water. Keep in a brown bottle. To use solutions 2 and 3 add 40 cc. of solution 2 to 10 cc. of solution 3. Make this mixture at least once a week. 4. Acetic acid solution, 3 per cent: Add 3 cc. of glacial acetic acid to about 75 cc. of distilled water and dilute to 100 cc. in a volumetric flask. 5. Starch solution, 1 per cent: Add 1 Gm. of soluble starch to 5 cc. of distilled water and heat slightly. Dilute to 100 cc. with saturated solution of sodium chloride. 6. Two hundredth normal solution of sodium thiosulfate: This may be made by adding 5 cc. of tenth-normal solution to enough distilled water to make 100 cc. or by dissolving 0.7 Gm. of sodium thiosulfate in 500 cc. of distilled water. 7. To make standardizing solution of potassium iodide: Place 0.3567 Gm. of potassium iodide in a 2,000 cc. volumetric flask, dissolve in a few cubic centimeters of distilled water and dilute to 2,000 cc. This is used for the titration of the two-hundredth normal sodium thiosulfate. Every new thiosulfate must be titrated, and the titration repeated at least once a week.

To titrate the thiosulfate solution: Mix 2 cc. of potassium iodide solution 7 with 2 cc. of 3 per cent acetic acid (4) and 2 cc. of the mixture of solutions 2 and 3 and 2 drops of starch solution 5. Titrate against solution 6 until all traces of blue have disappeared. Divide 2 by the number of cubic centimeters of solution 6 used to obtain the titer of the solution. Example: Assume 2.04 cc. of solution 6 was used: 2 divided by 2.04 equals 0.98, the titer.

The following apparatus is needed:
One automatic 2 cc. pipet mounted on the stock bottle.
One 0.1 cc. pipet.

One 2 cc. volumetric pipet.
One 3 cc. volumetric pipet.
One automatic microburet, 2 cc. graduated in 0.02 cc., mounted on a bottle.
Test tubes, 15 by 150 mm.
Test tubes, 30 by 90 mm.
Copper racks for test tubes, for immersion in water bath.
Glass funnel, 4 cm. in diameter.

Technic of test: Place in a test tube, 15 by 150 mm., 1 cc. of tenth-normal sodium hydroxide solution and 5 cc. of 0.45 per cent solution of zinc sulfate. Add 0.1 cc. of blood from the finger or lobe of the ear. Rinse the blood pipet twice with the fluid in the test tube. Immerse the test tube in boiling water for three minutes.

Prepare a test tube 30 by 90 mm. with a 4 cm. funnel, in which is placed a layer of moistened, fat-free absorbent cotton. Filter the coagulum in the first test tube through the cotton. The filtrate is clear. Rinse the first test tube with 3 cc. of distilled water and filter. Rinse a second time with 3 cc. of water and add to the filtrate. Allow all the solution to drip through. Add to the filtrate 2 cc. of solution 1 (potassium ferricyanide). Measure accurately. Place in a bath of boiling water for fifteen minutes. Allow to cool. Add 3 cc. of a mixture of solutions 2 and 3 and 2 cc. of solution 4 (3 per cent acetic acid) and 2 drops of solution 5 (starch). Titrate against two-hundredth normal sodium thiosulfate (solution 6). At the same time carry out a blank test without the addition of blood. Determine the number of cubic centimeters of sodium thiosulfate used in the actual test as well as in the blank titration. Multiply this by the titer of the solution. From the table given below ascertain the actual sugar value. Subtract the figure of the blank test from that of the actual test. The difference represents the milligrams of sugar in 100 cc. of blood.

Table for Determining Blood Sugar

Cc. N/200 thiosulfate = mg. of dextrose in 100 cc. of blood.

	0	1	2	3	4	5	6	7	8	9
0.0	385	382	379	376	373	370	367	364	361	358
0.1	355	352	350	348	345	343	341	338	336	333
0.2	331	329	327	325	323	321	318	316	314	312
0.3	310	308	306	304	302	300	298	296	294	292
0.4	290	288	286	284	282	278	278	276	274	272
0.5	270	268	266	264	262	260	259	257	255	253
0.6	251	249	247	245	243	241	240	238	236	234
0.7	232	230	228	226	224	222	221	219	217	215
0.8	213	211	209	208	206	204	202	200	199	197
0.9	195	193	191	190	188	186	184	182	181	179
1.0	177	175	173	172	170	168	166	164	163	161
1.1	159	157	155	154	152	150	148	146	145	143
1.2	141	139	138	136	134	132	131	129	127	125
1.3	124	122	120	119	117	115	113	111	110	108
1.4	106	104	102	101	099	097	095	093	092	090
1.5	088	086	084	083	081	079	077	075	074	072
1.6	070	068	066	065	063	061	059	057	056	054
1.7	052	050	048	047	045	043	041	039	038	036
1.8	034	032	031	029	027	025	024	022	020	019
1.9	017	015	014	012	010	008	007	005	003	002

INCREASING HEMOGLOBIN

To the Editor:—Is it true that a 25 per cent solution of iron ammonium citrate, half a drachm (2 Gm.), after meals, will increase the hemoglobin quicker than other iron tonics? Can you cite any proofs? I have been told that other iron combinations are converted in the gastrointestinal tract into insoluble compounds and that only a minute part of each dose is absorbed. Please omit name.

M.D., New York.

ANSWER.—There is abundant experimental foundation for the use of large dosages of iron in anemia. Whipple and Robscheit-Robbins (*Am. J. M. Sc.* **191**:11 [Jan.] 1936) showed by experiments on standard anemic dogs that a tenfold increase in the dose of iron will almost double the output of hemoglobin. Such doubling would cut in half the time required for cure. They also find that iron salts are used with equal facility by the dog to produce hemoglobin when given by mouth in the ferrous, ferric or reduced state. The determining factor is the amount of the iron metal.

Schulten (*München. med. Wchnschr.* **77**:355 [Feb. 28] 1930) found that the poor regeneration in some cases of posthemorrhagic anemia could with regularity be changed to rapid cure by giving iron in sufficiently large doses; e. g., 6 Gm. or more in twenty-four hours. In chlorosis the author finds doses up to 10 Gm. of reduced iron necessary to secure good effects

Buresh (*Deutsche med. Wchnschr.* **59**:882 [June 9] 1933) reported several cases of severe anemia following gastric hemorrhage in which large doses (reduced iron from 3 to 6 Gm. daily) produced a definitely accelerated blood regeneration as compared with small doses, e. g., in the form of Blaud's pills (three twice a day).

Bloedorn (*Minnesota Med.* **1**:5 [Jan.] 1936) concluded from a review of the literature and from his own experience that the optimal daily dose of iron, as metallic iron, will fall between 1 and 1.5 Gm. daily.

According to Bethell, Goldhamer, Isaacs and Sturgis (THE JOURNAL, Sept. 15, 1934, p. 797), "Iron in a soluble salt is apparently more efficiently utilized than the same quantity as ferrum reductum, but the latter will produce equally good results if given in adequate dosage and possesses the advantages of small bulk and comparative freedom from irritative effects on the alimentary tract. In our experience 4 Gm. of ferric ammonium citrate, representing about 0.8 Gm. of iron, or 1.5 Gm. of ferrum reductum, is an optimum amount for daily administration, and in these dosages the two forms of iron are quite comparable in their effects."

REACTIONS TO TUBERCULIN TEST

To the Editor:—A woman, aged 28, had always been in perfect health until about eight months ago, when she was given an intracutaneous tuberculin test on the left arm. Her brother at that time had a positive pulmonary tuberculosis. Her tuberculin test reacted about two plus. Several sputum examinations showed no tubercle bacillus. She did have an afternoon temperature of 99.4 F. for three weeks: There was no loss of weight or night sweats. There was no cough. X-ray examination showed a small area of increased density in the left apex about one-half inch in diameter, which appeared to be heavily calcified. About one week after the tuberculin test, she developed a constant pain in the left arm that radiated into the hand and axilla. Since then it has extended into the left side and left breast. The pain seems to be in the muscles and not in the joints. The pain became throbbing in character at times. There was no noticeable enlargement of the lymph glands in the left axilla. Various forms of heat, as infra-red, diathermy and the hot water bottle, have been applied. Massage with liniment and alcohol have been given. She has been given calcium lactate, salicylates, and A B D capsules. All this treatment does not seem to give much relief. Her tonsils are out, her teeth have been roentgenographed and are normal, and the sinuses are clear. She has no indigestion, no symptoms of kidney trouble and no leukorrhea. She states that within the last week the same aching has started in the opposite arm. Could this condition be an irritation of the lymphatics caused by the tuberculin test? If so, what treatment would you recommend? What is the prognosis?

VERN W. RITTER, M.D., Seattle.

ANSWER.—The number of tuberculin tests administered in the United States in the past few years is well in the millions. Apparently there is no record of any after-effect resulting in the symptoms described in this communication by any of the observers from the time of Mantoux to the present. Pirquet described delayed reactions from his test, but they were no different than the usual reactions except in point of time of their appearance. Recently it has been observed occasionally that children or young adults who have the tuberculin test administered with no apparent reaction at the usual time of interpretation but who in the course of a few weeks develop some febrile condition, such as scarlet fever, may have definite redness appear round the site of the administration of the tuberculin. This phenomenon has not been adequately explained. Indeed, it is usually thought that the exanthematous diseases, pregnancy and a few other conditions actually depress allergy, but not enough observations have been recorded to convince one that this is always true.

In the case cited, the reaction to the tuberculin test was mild. No lymphangitis was reported, and there was no visible enlargement of the lymph nodes in the axilla. The lymphatic channels from the arm drain into the axillary lymph nodes. There is no drainage toward the hand or the breast. The pain of which the patient complained in the left arm that radiated into the hand, axilla, side and breast did not make its appearance until one week after the test was administered. Moreover, aching has recently appeared in the right arm. The progressiveness of the symptoms, together with the fact that such large numbers of tuberculin tests have been administered without the recording of any such complication, leads one to conclude that the development of pain was a coincidence and that its cause must be sought elsewhere.

NON-SPORE FORMING ANAEROBES

To the Editor:—Kindly list the non-spore forming anaerobes. Please omit name.

M.D., Chicago.

ANSWER.—A list of non-spore forming anaerobes would consist of scores of long, cumbersome scientific names. Therefore this question could be answered to the best advantage by referring to a standard manual on bacteriology. Determinative Bacteriology, by Bergey, contains a list of all bacteria both pathogenic and nonpathogenic. Under the various families it is relatively easy to note the anaerobic species.

In the family Nitrobacteriaceae, on page 41, species 2, Thiobacillus dentrificans is anaerobic.

In the family Coccaceae, page 47, five species of anaerobic streptococci are noted. On page 97 in the family Coccaceae are noted eight species of anaerobic micrococci (species 38 to 46).

In the family Bacteriaceae, page 406, are listed nineteen species of Bacteroides.

In the family Actinomycetaceae, page 495, is listed one species of Leptotrichia as anaerobic. It is also well known that several species of Actinomycetaceae prefer small quantities of oxygen for growth.

In the family Mycobacteriaceae, page 557, are listed four anaerobic species of fusiform bacilli.

In the family Spirochaetaceae, page 619, the spirochetes, of which there are several, all grow best at a low oxygen tension. In this family, on page 624, under genus Borrelia, are listed fifteen species, most of which have been grown only under strictly anaerobic conditions. In the same family, under genus Treponema, page 627 (in which is included the syphilis organism), seven species are listed, all of which are strictly anaerobic.

It is to be noted, of course, that many varieties of bacteria, especially among Spirillaceae and streptococci, will grow better under partially anaerobic conditions especially for a time, after isolation from the body.

LIFE EXPECTANCY AND ENDOCRINOLOGY OF ALLERGY

To the Editor:—1. What is the average life span of clinically allergic persons; i. e., does the age of death among allergic individuals differ materially from that of the normal person? 2. Are there any figures available as to the relative frequency of hypertension, nephritis, diabetes, cancer and other chronic diseases among allergic persons as compared to the normal person? 3. Is there any theory now accepted as to why many allergic women lose their sensitivity after the menopause? Please omit name.

——, Tennessee.

ANSWER.—1. The expectancy of allergic patients does not differ from nonallergic individuals except in those with asthma. In these, the life expectancy is affected primarily because of the occurrence of pulmonary infections, especially pneumonia, and because of myocardial damage (Dublin, L. I., and Marks, H. N.: Mortality of Risks with Asthma, Published by the Association of Life Insurance Medical Directors of America, Metropolitan Life Insurance Company, 1923).

2. Hypertension is unusual in all allergic conditions, while diabetes may be considered almost a rarity in association with allergy.

Regarding the incidence of other chronic diseases among allergic (asthmatic) patients, Bray (Recent Advances in Allergy, Philadelphia, P. Blakiston's Son and Co., Inc., 1934, pp. 131-140) gives the following analysis of the literature:

Tuberculosis: Only one asthmatic patient in a hundred gives any positive evidence of active tuberculosis. Only one patient with active tuberculosis in two hundred suffers from true asthma.

Rheumatism: Acute in about 2.6 per cent of asthmatic patients, chronic in 0.8 per cent of asthmatic patients.

Syphilis: Less common in asthmatic than in nonasthmatic persons.

Heart disease: Not common in allergy.

Nephritis: 0.6 per cent in asthma.

3. Endocrine disturbances are believed to play a part in allergic symptoms. While rarely, if ever, of primary importance, their action is to "prepare the soil." Endocrine changes, however, may produce opposite effects. They may either predispose to or lessen the tendency for attacks of asthma. Thus the menopause or pregnancy may in some patients mark the beginning or an increased severity of allergic symptoms, while in others it may coincide with the termination or temporary subsidence of allergic symptoms. What these endocrine changes are and how their influence is exerted is not known.

USE OF TETANUS TOXOID

To the Editor:—Some time ago it occurred to me that the administration of tetanus toxoid would considerably diminish the necessity for the use of horse serum in sensitive patients. It seems to me that this procedure would be especially valuable in horse-dander sensitive patients as, according to a statement in the book "Asthma and Hay Fever: Theory and Practice," by Coca, Walzer and Thommen, every patient sensitive to horse dander is sensitive to horse serum. I would greatly appreciate your opinion of this procedure in these patients. Is tetanus toxoid available commercially and if so, where can it be obtained and what is the dosage?

VICTOR L. COHEN, M.D., Buffalo.

ANSWER.—Rarely tetanus toxoid may give rise to urticaria and systemic reactions. Experience indicates that such an allergic response may be expected in a much smaller percentage after toxoid injections than after injections of antitetanus serum. Tetanus toxoid is available commercially and can be obtained through the drug trade (see report of Council on Pharmacy and Chemistry on Tetanus Toxoid, Alum Precipitated, THE JOURNAL, May 16, 1936, p. 1735). It should be noted that tetanus toxoid is used for lasting preventive immunization against tetanus. As a rule, two subcutaneous injections of 1 cc. each are given from six weeks to two or three months apart; an additional third dose is given only at the time of the injury. In the preventive treatment of wounded persons, tetanus toxoid is to be used only if the patient has received two injections of toxoid at least a month previous to the injury; in other cases tetanus antitoxin should be given. There is a growing opinion in favor of active immunization against tetanus of persons whose work subjects them especially to the danger of tetanus infection.

SELECTION OF ELECTROCARDIOGRAPH

To the Editor:—I shall appreciate your advice regarding the type of electrocardiograph to get for a cardiac clinic. The dispensary cardiac clinic of which I have charge is considering obtaining an electrocardiograph for use in the study of its cardiac patients. Economy is an important matter to the dispensary. Therefore the question is whether a small apparatus, such as the "Cardiette" put out by the Sanborn Company, would be satisfactory. The cardiac clinic treated 162 patients in 1935, there being 393 treatments. This year there is an increase in attendance, and it is felt that an electrocardiogrph will serve as a stimulus toward a greater interest in cardiology.

M.D., Connecticut.

ANSWER.—In choosing an electrocardiograph the following points are of importance: accuracy, reliability, durability, ease of operation, service (adjustments, repairs, replacement of parts) and cost. While the lower priced instruments are attractive in cost, it would seem that for daily service in a cardiac clinic one of the higher priced machines, with presumably more rugged and durable materials, would be preferable. Most cardiologists feel that greater accuracy is had from the "string" type of electrocardiograph. If the cost of the more expensive machines is prohibitive, the smaller instruments have proved quite satisfactory. Replacement of defective or broken parts and service is of great importance and should be given careful consideration. The choice of an electrocardiograph is much like that of an automobile; their manufacture has become so standardized that the purchaser is assured that he receives what he pays for—no more and no less. One does not expect the performance of a Ford to parallel that of a Lincoln.

OPHTHALMOSCOPIC SIGNS OF DEATH

To the Editor:—I read in a newspaper item that a definite diagnosis of death can be made by observing with the ophthalmoscope the broken columns of blood in the retinal vessels. Does it apply to the arteries or veins, or both, and what is their appearance compared to normal?

WYATT BARNES, M.D., Decatur, Ala.

ANSWER.—The only definite ophthalmoscopic sign of death is the change in the color of the fundus from the normal red to a yellowish. This occurs as nearly coincidental with death as can be detected. In some instances the arteries practically disappear, whereas in others they maintain a full nearly normal appearance. The interrupted blood column makes its appearance only in the veins and is probably due to intravascular coagulation of the blood. A rather complete discussion of this subject is given in the American Encyclopedia of Ophthalmology, volume V, page 3784.

PROSTATITIS DUE TO TRICHOMONAS

To the Editor:—I have a patient with frequency and burning of urination and nocturia. Examination of the urine is negative. The secretion expressed from the prostate contains many pus cells and a few Trichomonas vaginalis organisms. The patient's wife is under treatment for Trichomonas vaginalis infestation. I should like to know whether prostatitis caused by Trichomonas vaginalis has been reported and the kind of treatment advised. Please omit name.

M.D., Wyoming.

ANSWER.—Prostatitis due to Trichomonas vaginalis has been reported by L. G. Stuhler (*Proc. Staff Meet., Mayo Clin.* **8**:221 [April 12] 1933) and by A. C. Drummond with a review of the literature (*Am. J. Surg.* **31**:98 [Jan.] 1936).

About 0.3 per cent of patients with prostatitis will be found to have Trichomonas vaginalis in the prostatic secretion. In any stubborn or rapidly recurrent Trichomonas infection in the female this complication should be suspected and the prostatic secretion of the husband should be examined.

Usually treatment by means of prostatic massage two or three times weekly accompanied by irrigations of the bladder with warm 1:8,000 potassium permanganate solution results in a prompt disappearance of the parasites from the prostatic secretion. If this is not the case, one or two intravenous injections of 0.3 Gm. of neoarsphenamine at five day intervals should be given.

EFFECTS OF CONGO RED AS HEMOSTATIC

To the Editor:—Recently congo red was administered intravenously in a case of persistent, profuse bleeding bronchiectasis, and the bleeding stopped spectacularly. Of course, the cessation of the hemoptysis might have been purely incidental, but I have seen similar results in cases of persistent bleeding peptic ulcer, and there are reports in the literature of a similar nature. The congo red was used as a 1 per cent aqueous solution, and two injections of 10 cc. each were given, twenty-four hours apart. Would you please give me the current medical opinion regarding the value of intravenous congo red as a hemostatic in cases of persistent bleeding from the gastro-intestinal and pulmonary organs, and the rationale? Please omit name and address. INTERN, New York.

ANSWER.—Wodekind in 1930 observed that congo red had a hemostatic effect in pulmonary hemorrhage when injected intravenously. Becker in 1930 confirmed these observations. Deinhardt in 1931 and Rossak in 1933, as well as Nikolojew and Gurewitsch in 1935, reported favorable results from its use, most especially in bleeding from inflammatory gynecologic processes. It was found ineffective by the last named authors in cases of extra-uterine pregnancy or hormonal hemorrhages. Graves and Kickham have found it of value in hemorrhages of the urinary tract, provided the patient still possesses a relatively normal coagulation mechanism. It is of no value in actual blood disease. As to the rationale, one may say that a transitory (twenty-four hours) shortening of coagulation time has been noted accompanied by an increase in blood platelets. It is also imagined that compression of capillaries may result from the deposit of the dye in the reticulo-endothelial system, in which it is promptly stored after its injection into the blood.

"BLACK EYE" AS SIGN OF INSTANTANEOUS DEATH

To the Editor:—Some time ago I was called to the scene of an automobile accident. When I arrived, a young man had died. The victim had what is commonly known as a black eye. The question arose in my mind as to whether he was killed instantly or not. Was I correct in assuming that if he was killed instantly there would be no ecchymosis of the eyelids, as there would be no pressure to force the fluid into the tissues? C. L. BOURDEAU, M.D., Missoula, Mont.

ANSWER.—If the young man had been killed instantaneously there would have been no time for discoloration of the eyelids by extravasation of blood into the tissues to take place. The question might be raised whether the "black eye" existed before the fatal injury.

VISSCHER-BOWMAN TEST FOR PREGNANCY

To the Editor:—I have been taking a series of pregnancy tests, using the Visscher-Bowman pregnancy test method. I have been taking the patients at random and have observed frequently that both male and female patients whose urine presents sufficient sugar to reduce Fehling's solution frequently give a positive test. In your opinion do you believe it ultimately a test for a form of metabolic sugar or has it any real value as a pregnancy test? JOHN F. LOEHLE, M.D., Lebanon, Pa.

ANSWER.—This test is a complicated chemical reaction employing several ingredients, and the final result is not a clearly defined one. A number of different reducing substances may interfere with the test. Consequently its value as a test for the diagnosis of pregnancy is uncertain and therefore unreliable, while so complicated a test cannot reasonably be expected to replace simpler, established ones for sugar.

The original article describing it appeared in the *Deutsche medizinische Wochenschrift* **60**:1823 (Nov.) 1934; abstract references are to be found in THE JOURNAL, Feb. 2, 1935, page 431, and Feb. 8, 1936, page 504, and also in the *Journal of Laboratory and Clinical Medicine* **21**:986 (June) 1936. The abstract of a subsequent article by C. Dolff is to be found in the *British Medical Journal* **1**:38 (Feb. 29) 1936.

ASH FROM CREMATED HUMAN BODY

To the Editor:—How much ash is left after a human body is cremated? I mean the ash of an average adult. If possible, give me the weight of the ash in grams. I cannot find this information in the literature. If you cannot help me, will you please put me in touch with the people of a big crematory so that I may obtain some literature on cremation.

THOMAS G. GÄERSTE, M.D., Curaçao, D. W. I.

ANSWER.—The ash of the average cremated adult weighs about 2,300 Gm., the weight varying with the size of the bones. Literature on cremation may be obtained from the International Bureau of Cremation at Helsingborg, Sweden, the Cremation Society of England at London, the Cremation Society of America at Portland, Ore., or the California Crematorium at Oakland, Calif.

USE OF NITROUS OXIDE GAS IN FOOD PRESERVATION

To the Editor:—I am experimenting with the processing of a food by means of nitrous oxide gas, which seems to accomplish the purpose better than any other agent I have found. Can you advise me whether there is any known effect on the human system by taking nitrous oxide gas internally? The amount of gas normally consumed in this product would be that occupying the space of a liquid measure of 1½ ounces. I realize that there may be some questions raised on the part of health authorities and I am anxious to get all the reliable data that I can so as to determine whether to pursue the experiment further or not.

S. D. LEVINGS, Chicago.

ANSWER.—As far as we know, there is no information in the literature on the use of nitrous oxide for the preservation of meat on a commercial basis. In the curing of certain meats nitrites are used and it is said that gaseous oxides of nitrogen have been tried as substitutes without particular success. There is little information to show that taking nitrous oxide gas internally would be either harmful or harmless. The question of the use of nitrous oxide in the processing of meats awaits adequate experimental investigation before any food product so treated is promulgated to the public. In the absence of adequate data, the use of foods so treated might well be viewed with caution.

TESTS OF KIDNEY FUNCTION

To the Editor:—I have a patient who is 42 years of age and who excretes no phenolsulfonphthalein. First I gave it intramuscularly and then intravenously. The patient gives a history of low kidney function about thirteen years ago but does not know the exact percentage. There is no clinical evidence of such a test. I would appreciate any information you may have. LOUIS L. SHERMAN, M.D., Oakland, Calif.

ANSWER.—In Queries and Minor Notes in THE JOURNAL, August 22, page 606, "Tests for Urea and Renal Function," are described some tests that can be done in this case. The common cause for lack of excretion of phenolsulfonphthalein with adequate renal function is retention in the urinary tract, either the bladder or the kidney pelvis. A blood urea and excretory urogram should clear up the diagnosis in this case.

ELLIOTT TREATMENT IN GONORRHEA IN WOMEN

To the Editor:—I have been led to believe that the early treatment of gonorrhea in women with the Elliott machine is apt to cause a wide dissemination of the infection through the lymphatics. Has clinical experience shown this to be true? Please omit name. M.D., Texas.

ANSWER.—In the experience of most gynecologists, Elliott treatments are contraindicated during the acute stage of the disease. Treatment increases the discomfort and may add to the severity of the infection.

Council on Medical Education and Hospitals

ADDITIONAL HOSPITALS APPROVED

The Council on Medical Education and Hospitals of the American Medical Association has given its approval to the following hospitals since the publication of the last previous list in THE JOURNAL, Aug. 29, 1936:

Hospitals Approved for Intern Training

Meadowbrook Hospital, Hempstead, N. Y.
Queens General Hospital, Jamaica, N. Y.

Hospitals Approved for Residencies in Specialties

St. Vincent's Hospital, Birmingham, Ala. Surgery.
Olive View Sanatorium, Olive View, Calif. Tuberculosis.
Riverside Hospital, Jacksonville, Fla. Mixed.
Kansas City General Hospital, Kansas City, Mo. Communicable Disease.
Cooper Hospital, Camden, N. J. Surgery.
New Rochelle Hospital, New Rochelle, N. Y. Radiology.

Hospitals Approved for Additional Residencies

Denver General Hospital, Denver. Tuberculosis.
Henry Ford Hospital, Detroit. Pathology and Pediatrics.
Eloise Hospital, Eloise, Mich. Malignant Diseases.
University of Nebraska Hospital, Omaha. Pathology.
Bellevue Hospital, New York City. Neuropsychiatry.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

ALABAMA: Montgomery, June 29-July 1. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

ARKANSAS: *Basic Science.* Little Rock, Nov. 2. Sec., Mr. Louis E. Gebauer, 701 Main St., Little Rock. *Medical (Regular).* Little Rock, Nov. 10. Sec., Dr. A. S. Buchanan, Prescott. *Medical (Eclectic).* Little Rock, Nov. 10. Sec., Dr. Clarence H. Young, 207½ Main St., Little Rock.

CALIFORNIA: *Reciprocity.* Los Angeles, Dec. 16. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

CONNECTICUT: *Regular.* Hartford, Nov. 10-11. *Endorsement.* Hartford, Nov. 24. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden. *Homeopathic.* Derby, Nov. 10. Sec., Dr. Joseph H. Evans, 1488 Chapel St., New Haven.

DELAWARE: Dover, July 13-15. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, Dover.

DISTRICT OF COLUMBIA: Washington, Jan. 11-12. Sec., Commission on Licensure, Dr. George C. Ruhland, 203 District Bldg., Washington.

FLORIDA: Jacksonville, Nov. 16-17. Sec., Dr. William M. Rowlett, P. O. Box 786, Tampa.

KANSAS: Topeka, Dec. 8-9. Sec., Board of Medical Registration and Examination, Dr. C. H. Ewing, 609 Broadway, Larned.

KENTUCKY: Louisville, Dec. 2-4. Sec., State Board of Health, Dr. A. T. McCormack, 532 W. Main St., Louisville.

LOUISIANA: New Orleans, December. Sec., Dr. Roy B. Harrison, 1507 Hibernia Bank Bldg., New Orleans.

MAINE: Portland, Nov. 3-4. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton, 192 State St., Portland.

MARYLAND: *Regular.* Baltimore, Dec. 8. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. *Homeopathic.* Baltimore, Dec. 8-9. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: Boston, Nov. 17-19. Sec., Board of Registration in Medicine, Dr. Stephen Rushmore, 413-F State House, Boston.

NEVADA: Carson City, Nov. 2-4. Sec., Dr. John E. Worden, Carson City.

NEW YORK: Albany, Buffalo, New York and Syracuse, Jan. 25-28. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, 315 Education Bldg., Albany.

NORTH CAROLINA: *Endorsement.* Raleigh, Nov. 30. Sec., Dr. Ben J. Lawrence, 503 Professional Bldg., Raleigh.

NORTH DAKOTA: Grand Forks, Jan. 5-8. Sec., Dr. G. M. Williamson, 4½ S. 3rd St., Grand Forks.

OKLAHOMA: Oklahoma City, Dec. 9. Sec., Dr. James D. Osborn, Jr., Frederick.

OREGON: *Basic Science.* Portland, Nov. 21. Sec., Mr. Charles D. Byrne, University of Oregon, Eugene. *Medical.* Portland, Jan. 5-7. Sec., Dr. Joseph F. Wood, 509 Selling Bldg., Portland.

PENNSYLVANIA: Philadelphia, January. Sec., Board of Medical Education and Licensure, Mr. James A. Newpher, Education Bldg., Harrisburg.

SOUTH CAROLINA: Columbia, Nov. 10. Sec., Dr. A. Earle Boozer, 505 Saluda Ave., Columbia.

SOUTH DAKOTA: Pierre, Jan. 19-20. Dir., Division of Medical Licensure, Dr. B. A. Dyar, Pierre.

TEXAS: Waco, Nov. 10-12. Sec., Dr. T. J. Crowe, 918-19-20 Mercantile Bldg., Dallas.

VERMONT: Burlington, Feb. 10-12. Sec., Board of Medical Registration, Dr. W. Scott Nay, Underhill.

VIRGINIA: Richmond, Dec. 9-13. Sec., Dr. J. W. Preston, 28½ Franklin Road, Roanoke.

WISCONSIN: *Basic Science.* Milwaukee, Dec. 19. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee. *Medical.* Madison, Jan. 12-14. Sec., Dr. Henry J. Gramling, 2203 S. Layton Blvd., Milwaukee.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II.* Feb. 9-11, June 21-23, and Sept. 13-15. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

SPECIAL BOARDS

AMERICAN BOARD OF DERMATOLOY AND SYPHILOLOGY: Philadelphia, June. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written* examination will be held simultaneously in different centers of the United States and Canada in December. *Practical* or *clinical* examination will be given in St. Louis in April. Chairman, Dr. Walter L. Bierring, 406 Sixth Ave., Des Moines.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: Written examination and review of case histories of Group B candidates will be held in various cities in the United States and Canada, Nov. 7. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh (6).

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: Cleveland, Jan. 9. *Only applications received by the Secretary on Dec. 1 or before will be acted upon by the Board.* Sec., Dr. Fremont A. Chandler, 180 N. Michigan Ave., Chicago.

AMERICAN BOARD OF PATHOLOGY: Baltimore, Nov. 17-18. Sec., Dr. F. W. Hartman, Henry Ford Hospital, Detroit, Mich.

AMERICAN BOARD OF PEDIATRICS: Baltimore, Nov. 15, and Cincinnati, Nov. 19. Sec., Dr. C. A. Aldrich, 723 Elm St., Winnetka, Ill.

AMERICAN BOARD OF PSYCHIATRY AND NEKROLOGY: New York, Dec. 29-30. Application must be sent to the Secretary before Oct. 30. Sec., Dr. Walter Freeman, 1028 Connecticut Ave., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: Atlantic City, June 4-6. Sec., Dr. Byrl R. Kirklin, Mayo Clinic, Rochester.

AMERICAN BOARD OF UROLOGY: Chicago, Dec. 4-6. Sec., Dr. Gilbert J. Thomas, 1009 Nicollet Ave., Minneapolis.

South Dakota July Report

Dr. Park B. Jenkins, director, Division of Medical Licensure, reports the written and practical examination held in Rapid City, July 21-22, 1936. The examination covered 13 subjects and included 90 questions. An average of 75 per cent was required to pass. Twelve candidates were examined, all of whom passed. One physician was licensed by reciprocity and 2 physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
Loyola University School of Medicine		(1935)	1
Northwestern University Medical School		(1936)	1
Rush Medical College		(1926), (1934), (1936, 2)	4
Johns Hopkins University School of Medicine		(1931)	1
Univ. of Minnesota Medical School (1934), (1935),*		(1936, 2)	4
University of Nebraska College of Medicine		(1931)	1

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
State University of Iowa College of Medicine		(1932)	Iowa

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Harvard University Medical School		(1931)	N. B. M. Ex.
University of Michigan Medical School		(1930)	N. B. M. Ex.

* This applicant has received the M.B. degree and will receive the M.D. degree on completion of internship.

National Board of Medical Examiners

The National Board of Medical Examiners reports that its certificate was awarded to 394 candidates who passed the final examination held during June and July 1935. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
University of Arkansas School of Medicine		(1935, 3)	3
College of Medical Evangelists		(1933, 2), (1934), (1935, 14), (1936, 49)	66
Univ. of Colorado School of Medicine		(1933, 2), (1934), (1935)	4
Yale Univ. School of Medicine		(1933, 3), (1934, 15), (1935, 14)	32
George Washington University School of Medicine		(1935, 4)	4
Georgetown Univ. School of Med.		(1932), (1934, 3) (1935, 24)	28
University of Georgia School of Medicine		(1935)	1
Loyola University School of Medicine		(1935), (1936, 3)	4
Northwestern University Medical School		(1935, 2), (1936, 4)	6
Rush Medical College		(1934, 3), (1935), (1936, 2)	6
School of Medicine of the Division of the Biological Sciences		(1934, 2)	2
University of Illinois College of Medicine		(1931)	1
University of Kansas School of Medicine		(1934)	1
Univ. of Louisville School of Medicine		(1934, 2), (1935, 2)	4
Tulane Univ. of Louisiana School of Med.		(1933, 3), (1934, 2)	5
Johns Hopkins University School of Medicine		(1928), (1933, 2) (1934, 3), (1935)	7
University of Maryland School of Medicine and College of Physicians and Surgeons		(1935)	1
Boston Univ. School of Medicine		(1933), (1934, 2), (1935, 7)	10
Harvard University Medical School		(1915), (1926), (1929), (1930), (1931, 5), (1932), (1933, 11), (1934, 18), (1935, 3)	42
Tufts College Med. School		(1932), (1933), (1934, 4), (1935, 12)	18
University of Michigan Medical School		(1932), (1933, 3)	4
Wayne University College of Medicine		(1936, 2)	2
Univ. of Minnesota Med. School		(1934), (1935, 6), (1936, 5)	12
St. Louis University School of Medicine		(1935, 2)	2
Washington Univ. School of Medicine		(1933), (1934), (1935)	3
Creighton University School of Medicine		(1935)	1
University of Nebraska College of Medicine		(1930), (1933), (1934), (1935)	4
Albany Medical College		(1935, 6)	6
Columbia University College of Physicians and Surgeons		(1933), (1934, 3), (1935)	5
Cornell Univ. Med. College		(1931), (1933), (1934, 5) (1935, 4)	11
Long Island College of Medicine		(1935, 3)	3
New York Homeopathic Medical College and Flower Hospital		(1933)	1
New York University, University and Bellevue Hospital Medical College		(1933, 2), (1934, 2)	4
New York University College of Medicine		(1935)	1
Syracuse University College of Medicine		(1933), (1935, 2)	3
University of Buffalo School of Medicine		(1935, 2)	2
University of Rochester School of Medicine		(1934)	1
Duke Univ. School of Medicine		(1932), (1934, 11), (1935, 4)	16
Western Reserve Univ. School of Medicine		(1933), (1935)	2
University of Oklahoma School of Medicine		(1935, 2)	2
University of Oregon Medical School		(1934), (1935)	2
Jefferson Medical College of Philadelphia		(1932), (1934, 3)	4
Temple University School of Medicine		(1935, 6)	6
University of Pennsylvania School of Medicine		(1933, 2), (1934, 9), (1935, 7)	18
University of Pittsburgh School of Medicine		(1935)	1
Woman's Medical College of Pennsylvania		(1933), (1934), (1935, 4)	6
Meharry Medical College		(1931), (1935)	2
Vanderbilt University School of Medicine		(1933, 2), (1934), (1935, 4)	7
University of Vermont College of Medicine		(1932), (1934)	2
Medical College of Virginia		(1935, 5)	5
Marquette University School of Medicine		(1927), (1936, 2)	3
University of Toronto Faculty of Medicine		(1933)	1
McGill University Faculty of Medicine		(1934, 2), (1935, 4)	6
Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin		(1934)	1

Book Notices

The Diseases of the Endocrine Glands. By Hermann Zondek, M.D., Director of the Medical Division, Bikur Cholim Hospital, Jerusalem. Third edition translated by Carl Prausnitz, M.D., M.R.C.S., L.R.C.P., Honorary Research Fellow, Victoria University of Manchester. Cloth. Price, $11. Pp. 492, with 168 illustrations. Baltimore: William Wood & Company, 1935.

This volume is now in its third edition, based on the last German edition, which appeared in 1926. However, it takes account of recent advances and presents particularly Zondek's point of view in relationship to the significance of the endocrine system. Its author is widely known as a leader in research in this field in Germany who subsequently was obliged to leave Germany and settled in Manchester, going finally to Jerusalem, where he is now in practice. The present edition was translated by Carl Prausnitz, also a former German physician, who also more recently has been established in Great Britain. The Zondek volume begins with a historical introduction and discusses the relationship between the glands and their physiology and chemistry. It discusses also the vitamins and the relationship of the glandular system to the endocrine system. Next it is concerned with methods for the examination of patients and with organotherapy. The second half of the book deals with specific conditions, such as goiter, cretinism, obesity, giantism and dwarfism and the other extraordinary conditions that result in the human body when the glands fail or go astray in their functions. The book is supplemented by an excellent bibliography and numerous well chosen illustrations. It is provided also with a most competent index.

Kurzgefasstes Lehrbuch der Psychiatrie. Von Dr. Johannes Lange, o. Professor der Psychiatrie in Breslau. Second edition. Paper. Price, 7.20 marks. Pp. 269, with 4 illustrations. Leipzig: Georg Thieme, 1936.

This compend of psychiatry is the second improved edition to be published. It consists of six chapters, on (1) general psychiatry, (2) varieties of disease, (3) treatment, (4) examination, history, diagnosis and important factors to be remembered in psychiatric disorders, (5) appendix and (6) bibliography. The first chapter includes general symptomatology, causes and discussions of the various psychoses. The second chapter includes the varieties of the psychoses beginning with congenital and abiotrophic entities; traumatic psychoses; dementia paralytica; cerebral syphilis and psychoses; epidemic encephalitis; psychoses of the aged; Huntington's chorea; other psychoses associated with encephalitis, meningitis, multiple sclerosis, chorea minor, paralysis agitans, athetosis and brain tumors; psychic disturbances due to acute infections and disturbances of the internal organs; alcoholism; drug addiction; psychoses from other poisons; genuine epilepsy; schizophrenia; manic-depressive psychoses; psychopathic personality, and abnormal mental reactions. In the third chapter, on treatment, Lange discusses preventive measures, marriage, psychotherapy, freudian and adlerian concepts, suicides, compulsion, sedatives and the interruption of pregnancy. The fourth chapter consists of a discussion regarding examination, history and diagnosis in mental disease. The fifth chapter includes Binet-Simon and Sommer mental tests as well as a general examination regarding school knowledge, practical knowledge, questions of ethics, ability to comprehend, judgment and facilities for imagination. The bibliography consists of twenty references. This book is recommended to neuropsychiatrists.

A Textbook of Psychiatry. By Arthur P. Noyes, M.D., Superintendent, State Hospital for Mental Diseases, Howard, Rhode Island. Second edition. Fabrikoid. Price, $2.50. Pp. 329. New York: Macmillan Company, 1936.

The second edition of this excellent textbook for nurses is highly satisfactory. The comment can be made that it is probably as valuable for beginning psychiatrists and students in psychiatry as for nurses. While in detail it is not as complete as this author's textbook on Modern Clinical Psychiatry, the descriptions of disease entities are relatively complete, nevertheless, and so well written that the conditions can be easily understood, even by the nurse who is not specially psychiatrically trained. The discussion of psychiatric nursing management is rather general in the case of each entity. Unfortunately in no place in the book is much space devoted to details of the special and important forms of therapy usually carried out by nurses, such as recreational therapy, occupational therapy and hydrotherapy, but there is a chapter on psychiatric nursing in which there is a brief general discussion of these forms of treatment. There is some general discussion at the end of the volume covering mental hygiene, mental deficiency and the psychoneuroses which should be of some cultural interest to nurses but probably will be ignored by most of them. The psychoneuroses, however, are not stressed, thus emphasizing the hospital rather than the clinical side of psychiatry. All in all the book continues to be the same satisfactory psychiatric contribution as was its first edition, and it stands well up in the list of works that can be used for teaching nurses the difficult subject of psychiatric nursing.

The Extra-Ocular Muscles: A Clinical Study of Normal and Abnormal Ocular Motility. By Luther C. Peter, A.M., M.D., Sc.D., Professor of Diseases of the Eye in the Graduate School of Medicine of the University of Pennsylvania. Second edition. Cloth. Price, $4.50. Pp. 351, with 141 illustrations. Philadelphia: Lea & Febiger, 1936.

In 1920 there appeared in these pages a review of the first edition of Peter's Muscles, and now after sixteen years a second edition has been published. The text is somewhat the same, albeit elaborated, which makes the new book fifty-seven pages more than the old. In the first part, devoted to anatomy and physiology, there is considerable more about instruments for the measurement of binocular vision and fusion and their use, but the anatomy is the same. Almost nothing new has been added to the chapter on heterophoria, nor has the material been rewritten. In esotropia the author has committed himself to the belief that the amblyopia present is the result of disuse and consequently is a symptom and not the cause of the squint. Fortunately he has stated this as his belief, for certainly it is not the universal opinion. Nor will his statements as to the results procured in the endeavor to develop vision in such amblyopias find universal credence. The O'Connor cinch operation is given much more space and in the hands of the author seems to have yielded satisfactory results. Also the entire chapter on surgery is enlarged and made much more useful. The final chapter, on nystagmus, is unchanged, even to the complete omission of the name of Ohm of Bottrop. The original review said: "The text is excellent and practical, the illustrations good and really illustrative, and the bookmaking and binding satisfactory. This is a book that every ophthalmic student and practicing ophthalmologist can read with profit and pleasure."

Les syndromes neuro-hématiques. Par Henri Roger, professeur de clinique des maladies nerveuses à la Faculté de médecine de Marseille, et Jean Olmer, médecin des hôpitaux de Marseille. Paper. Price, 32 francs. Pp. 230. Paris: Masson & Cie, 1936.

This monograph is concerned with the neurologic manifestations of diseases of the blood-forming organs. The first chapter deals with the neuro-anemic syndromes. This phase of the subject receives detailed discussion. The authors discuss their frequency, the work that has been done on the subject, and the theoretical and practical problems they present. After the discussion of the historical development of the subject and etiologic aspects, they consider the clinical and therapeutic applications. The diverse nature of nervous symptoms is pointed out and the authors classify them into medullary (medullo-anemic syndromes), encephalitic (encephalo-anemic or psycho-anemic syndromes) and neuritic (polyneuro-anemic syndromes). All forms of anemia are considered, from simple hypochromic anemia to pernicious anemia. The pathologic anatomy, pathogenesis and therapy are finally discussed. The second part deals with neurologic disturbances when the red blood cells are above normal (neuropolycythemic syndrome). The third chapter deals with neuroleukemic syndromes. In this group the pathogenesis is not always uniform and may result from hemorrhage or true leukemic infiltration. Under the neurohemorrhagic syndromes, hemophilia and purpuras are included, and nervous accidents following blood loss in general are discussed. In the discussion of Hodgkin's disease the authors bring out the fact that there has been an increasing incidence of neurologic symptoms in this disorder within recent years. The various sites infiltrated by malignant lymphogranulomas are discussed. Finally, after considering the diseases of the blood that react on the central and peripheral nervous system, the authors devote the last chapter of the book to cases in which the modification of the blood or even diseases

of the blood-forming organs are in consequence of alteration of the nervous system (hematoneurosyndromes). Much of the material in this chapter deals with the modification of the red and white cell series by disturbances of the sympathetic and parasympathetic nervous system under experimental conditions. The authors raise the question as to the possibility of a central regulation of the blood formula. The monograph is an important collection of data that should interest the neurologist and the hematologist. The literature on the various subjects is well covered and at the end of each chapter is a well selected bibliography.

Die Ursprünge des Verbrechens. Dargestellt am Lebenslauf von Zwillingen. Von Dr. Friedrich Stumpfl. Boards. Price, 5.80 marks. Pp. 176, with 3 illustrations. Leipzig: Georg Thieme, 1936.

The author continues the investigations originated by Johannes Lange on Crime as Destiny, Studies on Criminal Twins, Leipzig, 1929. Stumpfl presents his own results of a study of thirty-seven sets of twins, in whom at least one member of the pair had been guilty of some criminal act. Of the male pairs, fifteen were identical or one-egg twins; seventeen pairs were not. Of the female pairs, three were identical; two were not. In the earlier part of the volume a detailed history of each pair of twins investigated is presented. The author attempts to analyze each group on the basis of a number of specific factors, and the results are clearly presented in tabulated form. Since the author is studying criminality in twins, the first factor considered is whether or not both members of a pair were guilty of crimes. If both committed offenses, the correlation is indicated as positive. The second factor considered is whether each one of the twins committed only one crime or was a multiple offender. Stumpfl also records whether the crimes were similar or dissimilar in nature. In the fourth place, he considers the environment and mode of life of each of the twins. The fifth factor is a consideration of the abnormal character of the individuals. In psychopathic twins, agreement of the latter factor indicates concordance of the abnormalities. A study of the tables reveals that the identical twins show far greater agreement in criminality than the nonidentical, which is not surprising to any one who believes that the tendency to crime is hereditary, as identical twins tend to show greater fundamental similarity. The author's results indicate a preponderance of the hereditary factor in the origin of crime, with which conclusion some sociologists might be inclined to disagree. The difficulty of obtaining a sufficient number of cases of this particular kind is obvious. Nevertheless, the results in this and previous studies are significant. It would be desirable for the purpose of drawing more definite conclusions that a study be made of crime in identical twins reared apart. Adequate information of this type is the most difficult of all to obtain. Studies of twins appear to offer a logical and promising field for a better understanding of the age old question whether nature or nurture is the greatest influence in the destiny of man's life. Stumpfl's contribution, while limited in scope, should stimulate further investigation along this line.

Collected Writings, Alfred F. Hess. In two volumes. Cloth. Price, $15, per set. Pp. 719; 734, with 127 illustrations. Springfield, Illinois, & Baltimore: Charles C. Thomas, 1936.

The collected writings of Alfred Fabian Hess (1875-1933) contain the most important papers published during his lifetime. Mrs. Hess has written a short foreword. A biographic memoir written by Abraham Flexner is an appropriate introduction to this important collection of papers. As an investigator and contributor to the progress of pediatrics, Hess had no peer in America. Abraham Flexner quotes Dr. Edwards A. Park, who said that "Hess was the best example of what can be accomplished in science by the ability to think alone and unaided." Park continues: "Hess was the foremost investigator among pediatricians in this country. There was no one else who could possibly be compared with him." His medical papers cover a wide range of subjects, most of which show originality and painstaking work. His first papers dealt with pathologic and clinical subjects, particularly tuberculosis in infants, enlargement of the lymph nodes, tuberculosis of the tonsils, primary tuberculosis of the mesentery glands, the incidence of tubercle bacilli in New York City milk, and other papers on this subject. His contributions on infantile scurvy introduced some of our modern conceptions of this disease. He found that boiling milk and vegetables destroyed the antiscorbutic factor, though he demonstrated that canned vegetables retain their vitamin C content. He also showed that scurvy may exist in latent form. His contributions to our knowledge of this disease aided materially in a more complete understanding of its nature and etiologic aspects. One of his late papers on this subject dealt with the urinary excretion of the vitamin C factor. Hess next turned his attention to a study of rickets. These investigations were epoch making in character. After the profession was becoming skeptical about the potency of cod liver oil, it remained for Hess to show that it had specific curative properties. He discovered that vitamin D in food substances could be produced by irradiation, and also that it was possible to irradiate milk. Other investigations and papers deal with the isolation of the D substance in the sterile fraction of the food. He wrote on the spectrographic method for the study of vitamin D and also described a method for biologic assay of vitamin D in the blood and excreta. In his later papers he became interested in the relationship of foods to dentition and also on radiographic studies of calcification of the teeth from birth to adolescence and the relation of rickets to dental caries in the deciduous and permanent teeth. These collected writings of Alfred Fabian Hess commemorate the life work of one who had a genius for scientific investigation and who showed an unfailing industry and rare intellectual gifts. These volumes will have a permanent value in the story of the progress and development of American medicine.

Lexikon der kosmetischen Praxis. Bearbeitet von in- und ausländischen Fachleuten aus Wissenschaft und Praxis. Schriftleitung: R. Volk und F. Winter. Paper. Price, 75 marks. Pp. 705, with illustrations. Vienna: Julius Springer, 1936.

A condensed review scarcely does justice to work of this magnitude. The masterly presentation of the entire field of cosmetics as well as the discussion of related subjects on plastic surgery, dermatology, pharmacology and pharmacy in lexicographic style makes information readily available. Hygiene, vitamins, allergies, cosmetic surgery and cosmetic preparations are presented in the light of recent contributions. The clear, precise and concise language may be easily interpreted by a professional man with the aid of a small scientific dictionary. Technical details are given, with ample references to the latest literature. The numerous illustrations are excellent. Though compiled by experts in each field, the unity of the work is undisturbed. The book will be a valuable addition to those interested in the fields covered. Compilers, editors and publisher are to be thanked for giving such a timely work to the specialists in each subject. The book may be recommended because of its relative completeness.

Animal Micrology: Practical Exercises in Zoölogical Micro-Technique. By Michael F. Guyer, Professor of Zoölogy in the University of Wisconsin. With a chapter on Drawing by Elizabeth A. (Smith) Bean. Fourth edition. Cloth, $2.50. Pp. 331, with 76 illustrations. Chicago: University of Chicago Press, 1936.

For thirty years Professor Guyer's handbook of microscopic technic has been used by students as an aid in the intricacies of the preparation of animal tissues by fixation, sectioning and differential staining for the microscopic study of their cellular structure. This edition has been rewritten entirely so as to incorporate recent improvements, among which is the dioxan or diethylene oxide method of embedding tissues in paraffin. This avoids the hardening effects of absolute alcohol and clearing reagents, shortens the time of preparation, and preserves normal structure. Recently tertiary butyl alcohol was found to have similar desirable qualities. The book presents only well proved standard methods but covers the entire range of microscopic technic in animal micrology, with chapters on blood, bacteria, embryologic and cytologic technics, reconstruction, drawing, the microscope, and standard reagents. There is also an extended tabular view of methods for the preparation of all tissues and organs, and directions for the preparation of material for zoological laboratory courses. The author might have emphasized in the preparation of smears of stools for human intestinal Protozoa the value of fixation by hot (60 C.) Schaudinn's fluid with the addition of glacial acetic acid (4 per cent) and the rapid method of staining with the use of warm (30 C.) iron-alum and hematoxylin. The use of Wolff carbon pencils in the preparation of pencil drawings for halftone illustrations might also be added in the next edition.

A Treatise on Materia Medica and Therapeutics, Including Pharmacy, Dispensing, Pharmacology and Administration of Drugs. By the late Rakhaldas Ghosh. Fourteenth edition. By Birendra Nath Ghosh, F.R.F.P. & S., Professor of Pharmacology, Carmichael Medical College, Calcutta. Cloth. Price, Rs. 7, As. 8; 12s. 6d. Pp. 724, with 13 illustrations. Calcutta: Hilton & Co., 1936.

There has been a progressive "modernization" in successive editions of this book until this edition looks much like an English or American book on the same subject; and it has been brought down to date also in its contents. It conforms to the British Pharmacopeia (1932) and to the British Pharmaceutical Codex and in addition it lists the Indian indigenous drugs in a special section of about ten pages devoted merely to "some important and commonly used drugs." Such selection makes this chapter all the more interesting, as it may well be assumed that some of these at least may also be worthy of attention outside of India. The author attempts to make his book "a work on pharmacology as applied to therapeutics" and he regrets that "the teaching of pharmacology is not as an applied subject but as a separate subject detached from therapeutics." A result of such teaching is that "while a student, or for that matter a junior practitioner, may possess a knowledge of modern pharmacology, he is incapable of writing a prescription free from incompatibles and based on rational principles, with the result that he has recourse to the use of set prescriptions or proprietary remedies of questionable value." To all this one may say "Amen."

College Biology. By Walter H. Wellhouse, Professor of Biology, Iowa State College, and George O. Hendrickson, Assistant Professor of Zoology, Iowa State College. Cloth. Price, $3. Pp. 381, with 166 illustrations. New York: F. S. Crofts & Co., 1936.

This is the sort of textbook that perpetuates misinformation under the guise of a readable style and altruistic motives. The preface states that emphasis is placed on the biologic bases underlying human behavior and on the interests of general students rather than on the preparation of future biologists. Much of the material contained is stated to be original. Some of it certainly is. The book is inaccurate and often misleading. A few instances will suffice to illustrate the uncritical writing. Plasmodium is stated to form spores in red blood cells, Noctiluca to inhabit tropical seas and to give them the color of tomato soup, a trypanosome to cause a deadly sleeping sickness in South Africa, free oxygen present in digesting food to be utilized by the tapeworm in respiration, man to obtain Trichinella worms by eating "measly" pork, and little hookworms in the soil to hook onto human skin and dig their way into the blood stream. Many of the illustrations are well known veterans long in service or wretchedly inadequate new ones, and all are poorly executed. Publishers might profit by having manuscripts critically read before investing in printing them. High schools, junior colleges and state colleges should have textbooks as critically written in matters of scientific accuracy as colleges and universities.

Die Chirurgie der Schädelbasisfrakturen auf Grund 25jähriger Erfahrungen. Von Dr. Otto Voss, o. ö. Professor und Direktor der Univ.-Ohren-Hals-Nasenklinik an der Johann Wolfgang Goethe-Universität Frankfurt a. M. Paper. Price, 24 marks. Pp. 182, with 93 illustrations. Leipzig: Johann Ambrosius Barth, 1936.

Voss considers the surgical management of basal skull fractures from a point of vantage acquired through twenty-five years' experience. His discussion is based on a study of 122 selected cases of basal skull fractures, of which seventy-seven were treated by operation and forty-five by conservative management, with a total mortality of 20.5 per cent for the 122 selected cases. General remarks on etiology and pathology are followed by statistical consideration and a detailed pathologic study of special types of basal fractures. Symptoms and signs, especially those associated with involvement of the petrous portion of the temporal bone, are correlated with the roentgenologic and operative observations. Under treatment the author discusses indications and contraindications for operation, technic and route of approach, and tabulates the types of operations performed. Case reports and consideration of individual cases give the reader a clear concept of the author's views in diagnosis and treatment. The book is well illustrated with reproductions of excellent photographs of gross pathologic specimens and x-ray films, and with numerous colored drawings of histologic preparations. An extensive bibliography is included. Since the author's material is for the most part a selection of complicated cases with traumatic involvement of the auditory and vestibular apparatus, the facial nerve and the nasal accessory sinuses, or with infection of the ear and meninges, the book will be of more interest to the specialist in head injuries and to the otorhinologist than to the general practitioner.

The Relationship of Eye Muscles to Semicircular Canal Currents in Rotationally Induced Nystagmus. By John Favill, A.B., M.D., F.A.C.P., Clinical Professor of Neurology, University of Chicago. Cloth. Pp. 46, with 7 illustrations. Privately printed. Chicago, 1936.

This little work contains results of research over a considerable period of years and embodies a number of papers previously published in various journals and in one book on neurology. After an introduction in which the original work of Ewald is discussed and the views of Ruttin, Lemere and Quix are given, the author discusses the assignment of eye muscles to canal currents. The recognized types of nystagmus induced by rotation are presented in a table. Furthermore, there is a table showing the theoretically possible types of nystagmus produced by rotation. The author states that the "total number of possible currents or combinations of currents in one labyrinth is twenty-six. Fourteen current pictures account for the known types of induced nystagmus. Twenty-six current pictures remain. Calculations were made as to how to produce these by rotation and what eye movements would result. Experiments with one normal man show the results as predicted." There is a fairly comprehensive bibliography appended, and seven tables are included. This little brochure should prove interesting to all who concern themselves with tests of the vestibular mechanism.

Dermatologie und Chirurgie: Darstellung der Grenzgebiete für die Praxis. Von Wilhelm Richter, Direktor der Universitäts-Hautklinik Greifswald. Mit Geleitworten von Prof. Dr. A. Bier und Prof. Dr. K. Zieler. Paper. Price, 34 marks. Pp. 477, with 356 illustrations. Leipzig: Leopold Voss, 1936.

This volume is devoted to the borderlines of dermatology and surgery, written by a dermatologist who served as a consultant at the surgical clinic of Professor Bier. The material is considered in eleven subdivisions and covers more than 250 diseases, many of which are not usually found in textbooks of dermatology. Thus one finds sections on various types of muscle, bone and joint diseases, oral lesions, the surgical complications of syphilis and tuberculosis, an unusually complete presentation of tumors of the skin, a detailed description of the different types of cutaneous gangrene and some of the surgical forms of venereal diseases. No attempt is made to present surgical technic or to duplicate the field usually included in books on minor surgery. Emphasis is placed on localization, symptomatology and histopathology as aids to diagnosis and on etiology and pathogenesis as aids to treatment. The large number of black and white and histologic illustrations are well selected and unusually clear. At the end of the book is a bibliography which seems rather incomplete and only rarely gives credit to American authors for their contributions to modern dermatology. In spite of this omission this book can be highly recommended for its vivid portrayal of the borderline field of two important medical specialties.

Why Keep Them Alive? By Paul de Kruif, in collaboration with Rhea de Kruif. Cloth. Price, $3. Pp. 293. New York: Harcourt, Brace & Company, 1936.

Most of the writings of Paul de Kruif which appear in this book have been published previously in the *Country Gentleman* or in the *Ladies' Home Journal*. Paul de Kruif has established his ability to dramatize medical discoveries and medical work. In this book he is concerned with malnutrition and disease as they affect children, observing the results of malnutrition and disease on the growing child and cogitating as to the failure of our civilization to meet this problem. Dr. de Kruif becomes well nigh frantic in his emotional response and conveys his franticism to the reader by the manner of his expression. As is unfortunately typical of his other writings in the field of medicine, he is far too willing to accept research as established discoveries and is usually too ready to recommend acceptance as routine of a method or technic which is still in an experimental stage. He is likely to assign far too much credit to one

individual for the development of a method or a technic when the work of that individual may not even warrant a share of the credit or priority. Nevertheless, the general effect of his works is good, and they are, moreover, sufficiently popular to command for him a wide audience. "Why Keep Them Alive?" is more dramatic and moving than some of his previous contributions, yet it cannot compare in interest or authenticity with his world-known contribution on "Microbe Hunters."

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Medical Practice Acts: Corporate Practice of Medicine Illegal in Illinois.—The United Medical Service, Inc., a corporation organized for profit, operated a clinic in Chicago, rendering an advertised fixed-fee, low-cost medical service through licensed physicians employed and paid by the corporation. The state, by its attorney general, petitioned for leave to file an information in the nature of a quo warranto to require the corporation to show by what warrant it engaged in the practice of medicine. The trial court held that the corporation could not legally practice medicine in Illinois and rendered a judgment against it. From this judgment the corporation appealed to the Supreme Court of Illinois.

The corporation contended, among other things, that the ownership of a clinic with offices where the treatment of disease is engaged in solely by licensed physicians employed by the corporation does not constitute the practice of medicine by the corporation. It argued that the fact that the contract of payment for the medical services to be rendered is made between the corporation and the patient does not change the professional relationship between the patient and the physicians who treat him in the corporation's offices. With this contention the Supreme Court could not agree, citing a former decision by the court in *Dr. Allison, Dentist* v. *Allison,* 360 Ill. 638, 196 N. E. 799, wherein it was said, after pointing out that the practice of a profession is subject to licensing and regulation and is not subject to commercialization or exploitation:

> To practice a profession requires something more than the financial ability to hire competent persons to do the actual work. It can be done only by a duly qualified human being, and to qualify something more than mere knowledge or skill is essential. . . . No corporation can qualify.

From the stipulated facts, the court said, the United Medical Service, Inc., had been engaged in the pursuit of activities which under the medical practice act it could not pursue without a license. The medical practice act evinces the manifest intent on the part of the legislature that only individuals may obtain a license to practice medicine. No corporation can meet the requirements of the act. The fact that the certificate of incorporation of the United Medical Service states that one of the corporate objects is the prevention and treatment of disease for profit does not legalize the practice of medicine by the corporation. When a corporation for profit is formed under the general act relating to incorporation, the laws of the state determine what powers may be lawfully exercised, not the statement appearing in the certificate of incorporation.

A corporate franchise, the court said, proceeds from the sovereign power, and the people have the right at all times to inquire into the title by which such a franchise is claimed or exercised and to have a judgment of ouster if the franchise was improperly granted. In the present case the only relief sought and obtained was the ouster of the corporation from the assumption and usurpation of a franchise charged to have been improperly granted to it. Quo warranto was therefore the proper remedy. The fact that the medical practice act subjects violators to a possible fine or imprisonment does not preclude the use of quo warranto. From the express language of the act, in the opinion of the court, it is apparent that the penalties prescribed are directed primarily against individuals practicing medicine without a license. The punishment by incarceration is not applicable to corporations. The maximum fine of $500 that may be imposed, if it applies both to corporations and to individuals, hardly affords an adequate remedy to prevent recurrences of the unlawful exercise of a power improperly conferred on corporations such as the United Medical Service. There was, therefore, no adequate remedy provided in the medical practice act that could be invoked in the present case.

If the medical practice act be construed to prohibit corporations from practicing medicine by employing licensed physicians to that end, the United Medical Service contended, the act constitutes an unreasonable exercise of the police power by the state. The police power of the state, said the Supreme Court, includes the power to enact comprehensive, detailed and rigid regulations for the practice of medicine, surgery and dentistry. There is no right to practice medicine which is not subordinate to the police power. To sustain its contention, the United Medical Service relied on *Liggett* v. *Baldridge,* 278 U. S. 105, 49 S. Ct. 57, 73 L. Ed. 204, wherein the United States Supreme Court held invalid a Pennsylvania statute providing that every pharmacy or drug store should be owned only by a licensed pharmacist, and that no corporation, association or copartnership should own a pharmacy unless all the members or partners were licensed pharmacists. The United States Supreme Court held that mere stock ownership in a corporation owning and operating a drug store could have no real or substantial relation to the public health and that the law was an unreasonable and unnecessary restriction on private business. It does not follow, however, said the Supreme Court of Illinois, that because a person may have a constitutional property right to operate a drug store he has a like absolute right to engage in the practice of a profession such as medicine, dentistry or law. Neither a natural person nor an intangible entity can complain if unable to fulfil the requirements reasonably prerequisite to obtaining a license to engage in a particular profession. The holding in the Liggett case, continued the court, does not conflict with the well established rule that the state may deny to corporations the right to practice professions and insist on the personal obligations of individual practitioners.

The judgment of the superior court against the United Medical Service, Inc., was therefore affirmed.—*People, by Kerner, Atty. Gen. v. United Medical Service, Inc. (Ill.), 200 N. E. 157.*

Society Proceedings

COMING MEETINGS

American Association of Railway Surgeons, Chicago, Nov. 5-7. Dr. Daniel B. Moss, 547 West Jackson Blvd., Chicago, Secretary.

American Clinical and Climatological Association, Richmond, Va., Oct. 26-28. Dr. Francis M. Rackemann, 263 Beacon St., Boston, Secretary.

American Society of Tropical Medicine, Baltimore, November 18-20. Dr. N. Paul Hudson, Department of Bacteriology, Ohio State University, Columbus, Ohio, Secretary.

Association of American Medical Colleges, Atlanta, Ga., Oct. 26-28. Dr. Fred C. Zapffe, 5 South Wabash Ave., Chicago, Secretary.

Association of Military Surgeons of the United States, Detroit, Oct. 29-31. Dr. H. L. Gilchrist, Army Medical Museum, Washington, D. C., Secretary.

Central Society for Clinical Research, Chicago, Nov. 6-7. Dr. Lawrence D. Thompson, 4932 Maryland Ave., St. Louis, Secretary.

National Society for the Prevention of Blindness, Columbus, Ohio, Dec. 3-5. Mr. Lewis H. Carris, 50 West 50th St., New York, Managing Director.

New York State Association of Public Health Laboratories, Albany, Nov. 6. Miss Mary B. Kirkbride, New Scotland Avenue, Albany, Secretary.

Omaha Mid-West Clinical Society, Omaha, Oct. 26-30. Dr. J. D. McCarthy, 107 South 17th St., Omaha, Secretary.

Pacific Coast Society of Obstetrics and Gynecology, Seattle, Nov. 11-14. Dr. T. Floyd Bell, 400 29th St., Oakland, Calif., Secretary.

Radiological Society of North America, Cincinnati, Nov. 30-Dec. 4. Dr. Donald S. Childs, 607 Medical Arts Building, Syracuse, N. Y., Secretary.

Southern Medical Association, Baltimore, November 17-20. Mr. C. P. Loranz, Empire Building, Birmingham, Ala., Secretary.

Southern Surgical Association, Edgewater Park, Miss., Dec. 15-17. Dr. E. Alton Ochsner, 1430 Tulane Ave., New Orleans, Secretary.

Southwestern Medical Association, El Paso, Texas, Nov. 19-21. Dr. Orville E. Egbert, 116 Mills Street, El Paso, Secretary.

Texas Ophthalmological and Oto-Laryngological Society, Fort Worth, Dec. 4-5. Dr. Kelly Cox, 1719 Pacific Ave., Dallas, Secretary.

Tri-States Medical Society of Texas, Louisiana and Arkansas, Longview, Texas, Oct. 26-27. Dr. John M. Ellis, Mt. Pleasant, Texas, Secretary.

Western Surgical Association, Kansas City, Mo., Dec. 11-12. Dr. A. H. Montgomery, 122 S. Michigan Blvd., Chicago, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers in continental United States and Canada for a period of three days. Periodicals are available from 1926 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Surgery, New York

33: 171-340 (Aug.) 1936

Cancer of Face, Especially Region of Eye: Method of Treatment. H. L. Albright, Boston.—p. 176.
Significance of Gross Hemorrhage in Peptic Ulcer. J. W. Hinton, New York.—p. 180.
Intravenous Use of Pitocin. L. H. Douglass, J. E. Savage and E. N. DuPuy, Baltimore.—p. 183.
Closed Reduction of Reversed Colles Fractures. P. W. Greeley, Winnetka, Ill., and M. H. Hobart, Evanston, Ill.—p. 186.
*Use of Urea to Stimulate Healing in Chronic Purulent Wounds. W. Robinson, Washington, D. C.—p. 192.
Medicolegal Rôle of Trauma in Brain Tumors. R. H. Fowler, Newark, N. J.—p. 198.
*Lumbar Puncture in Head Injuries. F. I. Shatara, Brooklyn.—p. 204.
Pulmonary Embolism: Based on Study of 271 Instances. D. C. Collins, Los Angeles.—p. 210.
Clean Wound Surgery in Hot Climates. F. G. Irwin and J. Plá, San Juan, Puerto Rico.—p. 220.
Compound Colored Alcoholic Solution of Mercuric Chloride for Skin Disinfection. J. J. Kirschenmann, Brooklyn.—p. 223.
Gruskin Intradermal Test for Pregnancy. E. Schwartz, Brooklyn.—p. 225.
Modification of Beck's Low Flap Cesarean Section. F. A. Kassebohm and M. J. Schreiber, New York.—p. 229.
Autotransfusion: Review of American Literature, with Report of Two Additional Cases. C. M. Watson and J. R. Watson, Pittsburgh.—p. 232.
Pneumococcic Peritonitis: Report of Five Cases. R. C. Johnston, New Kensington, Pa.—p. 238.
Spinal Anesthesia: Procaine Concentration Changes at Site of Injection in Subarachnoid Anesthesia. H. Koster, A. Shapiro and A. Leikensohn, Brooklyn.—p. 245.
Intravenous Iodine in Preoperative Treatment of Hyperthyroidism. T. B. Jones, Rochester, N. Y.—p. 249.
Gastro-Ileostomy and Gastro-Ileac Ulcer. B. Kogut and E. Stein, Brooklyn.—p. 263.
Analysis of 100 Consecutive Thyroidectomies. L. F. Licht, Richmond Hill, N. Y.—p. 270.

Urea in Healing of Chronic Purulent Wounds.—Robinson points out that, in an investigation of the means by which the healing effects of surgical maggots are produced in suppurating wounds of long standing, it was recently discovered that the purine derivative allantoin occurs in maggot excretions and stimulates healing in purulent wounds. Further study has shown that this is not the only substance with therapeutic properties present in maggot excretions. Urea, the still simpler and well known product of protein metabolism, has been found to produce similar healing effects. Interest was aroused in the possibility that urea might have healing characteristics through the picture presented by the structural chemical formula of allantoin. On hydrolysis, the side chain easily forms urea. The conception that allantoin is therapeutically active partly through its side chain led to the present investigation. Urea has been found to stimulate healing in chronic purulent wounds. The effects obtained are a cleansing of the wound by the removal of necrotic material and pyogenic bacteria present, and a promotion of the growth of granulation tissue. Like allantoin, urea occurs in maggot excretions and its presence serves as a further elucidation of the remarkable efficiency of surgical maggots in healing chronic suppurating wounds. This healing action of urea probably accounts in part for the custom prevalent for centuries in Europe, Asia and Africa, and also practiced in America, of using urine to promote the cleansing and healing of wounds. Urea, which is manufactured in enormous quantities for use as a soil fertilizer, is available for therapeutic use without any connection with animal excretions. It can be made from the three simple gases nitrogen, hydrogen and carbon dioxide and is a pure white crystalline substance. In wound treatment a 2 per cent solution in water has been used on saturated gauze dressings applied directly to the wound. The solution is bland, odorless and nontoxic. The treatment is inexpensive and easily given. Urea is present in the cells of all the tissues of the body; it rapidly permeates the membranes of the cells and its concentration in these rises and falls readily with that of the blood and lymph. In view of the remarkable cleansing and healing properties of urea in chronic purulent wounds, it appears that the general conception of this material as only a waste product has tended to obscure its therapeutic character.

Lumbar Puncture in Head Injuries.—Based on a study of the anatomy and physiology of the brain and on clinical experiences in a series of more than 500 cases of head injuries with study of necropsy material, together with a review of the literature on the subject, Shatara makes the following deductions: 1. The withdrawal of cerebrospinal fluid by lumbar puncture as a diagnostic procedure should be performed in every case of head injury, after the patient has reacted from shock. The pressure should be recorded and the fluid collected in three tubes of about 5 cc. in each. If the fluid is uniformly bloody in the three tubes, if the supernatant fluid is xanthochromic after centrifugating and if the pressure is over 10-12 mm. of mercury, a diagnosis of intracranial injury with probable brain laceration or contusion and hemorrhage can be made. If the fluid is clear but under increased pressure, and if there is other corroborating evidence, a diagnosis of traumatic cerebral edema can be made. If the fluid is clear and the pressure is normal, one is justified in ruling out an intracranial injury even in the presence of a fractured skull. 2. Lumbar puncture is a useful therapeutic procedure in cases of traumatic edema. The pressure should be reduced by half the excess above normal and the procedure repeated about every six to twelve hours until the pressure is normal. 3. When the fluid is bloody and under increased pressure, no ill effects have been noted from repeated punctures, if the pressure is not reduced suddenly.

Arch. of Physical Therapy, X-Ray, Radium, Chicago

17: 481-544 (Aug.) 1936

Development of Short Wave Therapy. E. Schliephake, Giessen, Germany.—p. 487.
Fango Packs in Therapy. H. J. Behrend, New York.—p. 501.
Temperature of Skin Surface. W. Bierman, New York.—p. 504.
Biology of Ultrashort Waves. S. Jellinek, Vienna, Austria.—p. 512.
*Cervicitis: Five Years' Experience with Diathermy. M. A. Roblee, St. Louis.—p. 514.
Further Studies of Endocervicitis, Cervicitis and Erosions. W. E. Ground, Superior, Wis.—p. 520.

Cervicitis.—Roblee points out that cervicitis is a condition of structural change in the cervix. It is produced by the gonococcus or by nonspecific pyogenic organisms which have gained a foothold because of trauma to the cervix. The erosion of the cervix is columnar epithelium extension replacing the squamous epithelium. The healed erosion of cervicitis is the squamous epithelium growing back over the columnar extension. This causes the racemose gland to become permanently blocked, with a resulting hypertrophy of the entire cervix, and producing the picture of chronic cystic cervicitis. Whatever erosion exists at this stage depends on the completion of regrowth of squamous epithelium. If the columnar epithelium is piled up so that the squamous epithelium cannot replace it, a papillary erosion with ectropion formation exists. The author emphasizes that the treatment for such a condition must be one of removal of this structural change. To patch it up, so to speak, means inviting trouble in later years. If the squamous epithelium has lost out in the erosion struggle and grown abnormally, the entire cystic diseased gland bearing area must be destroyed and removed so that a single layer of squamous epithelium can line the newly constructed cervix and its canal. The Sturmdorff operation is designed for this end and accomplishes it effectively. It became the problem to apply this principle to the ambulatory patient. For the past five years, various surgical diathermy procedures have been applied to ambulatory cases of chronic cervicitis in the outpatient department of the Washington University School of Medicine. These cases have been followed by its social service at three months for the first year after treatment and every four to six months thereafter. In this manner it has been determined how lasting a result has been obtained by the various

methods employed. The patients are selected from the general gynecologic clinic and referred to the cervicitis clinic. Here the chronicity is determined by the Schiller iodine stain and colposcopy and an attempt is made to rule out a definite malignant condition. Biopsies for study are taken, and the treatment is begun. No anesthetic is used in ambulatory cases. Sodium amytal or some other suitable barbiturate with scopolamine or small doses of morphine and scopolamine are used in cases that are hospitalized for twenty-four hours or longer. It has been felt that the knife probing depth removal has given more lasting results than the wire loop conization that cuts through the cystic area and improves the condition by drainage rather than actually removing all the cystic area by destruction. It appears that there is less tendency to immediate hemorrhage with the knife coagulation method as compared with conization, as no packing is ever used after the former procedure. For this reason the author has adhered to the knife coagulating method for ambulatory cases and favors a large wire loop removal for hospital cases for which the Sturmdorff operation has not been elected. The author employed surgical diathermy in the past five years in 350 cases of cervicitis. Of all cases treated, 86.61 per cent had an uneventful postoperative course and good result. Good end-results were obtained in 94 per cent of all cases treated.

Archives of Surgery, Chicago

33: 187-348 (Aug.) 1936

Effect of Acetylcholine and of Physostigmine on Gastro-Intestinal Motility: Observations of Normal Animals and of Animals with Experimental Peritonitis. L. M. Zimmerman, R. Frank and H. Necheles, Chicago.—p. 187.

Allergy as Explanation of Dehiscence of Wound and Incisional Hernia. J. W. Hinton, New York.—p. 197.

*Ethylene Glycol and Magnesium Sulfate Paste in Treatment of Inflammatory Processes. J. W. Hinton, New York.—p. 210.

Arthritis and Injuries to Joints. D. H. Kling, Los Angeles.—p. 213.

Effects of Circulatory Disturbances on Structure and Healing of Bone: Injuries of Head of Femur in Young Rabbits. G. H. Kistler, Boston. —p. 225.

Traumatic Arteriovenous Fistula Involving Right Femoral Artery and Vein: Spontaneous Closure. T. J. Dry and B. T. Horton, Rochester, Minn.—p. 248.

*Surgical Treatment of Idiopathic Hypertrophy of the Breast. S. Fomon, New York.—p. 253.

Aneurysms of the Hand. V. C. David, Chicago.—p. 267.

Studies in Gastro-Intestinal Motility. T. S. Raiford and M. G. Mulinos, New York.—p. 276.

Variations of Cranial Venous Sinuses in Region of Torcular Herophili. B. Woodhall, Baltimore.—p. 297.

Review of Urologic Surgery. A. J. Scholl, Los Angeles; F. Hinman, San Francisco; A. B. Hepler, Seattle; R. Gutierrez, New York.; G. J. Thompson and J. T. Priestley, Rochester, Minn.; J. Verbrugge, Antwerp, Belgium, and V. J. O'Conor, Chicago.—p. 315.

Ethylene Glycol and Magnesium Sulfate Paste in Treatment of Inflammatory Processes.—Hinton shows that, in preparing an ethylene glycol-magnesium sulfate paste it is necessary to use about 60 per cent of magnesium sulfate and 40 per cent of ethylene glycol by volume. The exact proportion varies with the different preparations of magnesium sulfate. The ethylene glycol should be brought to a boil and the magnesium sulfate slowly added to the glycol preparation and thoroughly stirred until the solution becomes adherent to the stirring rod. Then it is transferred to an electrical mixer and kept in constant motion for from twenty to twenty-five minutes. A chemical change takes place when the two ingredients are mixed, which is manifested by an elevation of temperature. The thick paste should be allowed to stand for ten days before it is used. The preparation should be stirred daily for five minutes during this period. The paste is of a semisolid consistency and can be applied thickly over the affected area and covered by a dressing. It is usually necessary to change the paste every eight hours in cases of severe cellulitis. In cases of localized infection, such as a furuncle, it can be applied and the area left uncovered. The paste should be put on at frequent intervals. The object in using this preparation is to have a medicament with hypertonic properties, so that continuous osmosis will take place in the inflammatory area and by this means the infection will be localized and the edema relieved and as a result the pain greatly diminished, if not entirely overcome. During the two year period that the preparation described has been used, more than a hundred inflammatory conditions have been observed, which have ranged from simple furuncles to severe cellulitis with lymphangitis and even to furuncles of the upper lip and around the nares. The results have been most astounding in the severe type of cellulitis. For less severe infections the preparation has proved equally effective, and it has a definite field of application in the treatment of ordinary furunculosis or low grade infection. There are three reasons for using the ethylene glycol and magnesium sulfate paste: 1. It acts more rapidly than wet compresses of magnesium sulfate or other ointments. 2. It is more uniformly successful in arresting or localizing infections than other methods of treatment. 3. It acts continuously and therefore saves nursing care.

Surgical Treatment of Hypertrophy of Breast.—Fomon emphasizes that in each particular instance the surgeon must critically study the indication to determine whether operative intervention is justified; he must be especially cautious in view of the fact that spontaneous regression is possible. The desirability of the reconstruction cannot be left entirely to the whim of the patient, despite the minor character of the operative procedure. Before describing the operation, the author gives a brief description of the anatomy of the breast and then mentions the several varieties of idiopathic hypertrophy. Then he gives a detailed description of the technic of the operation. He shows a diagram by which the location of the new areola can be determined. Then he takes up the approach to the breast, its delivery, reduction, molding and fixation, the transplantation of the areola, the removal of the redundant skin and the dressing. The author concludes that, although the operation borders on being a major one, experience shows that it is well borne. Recovery is rapid, and the relief is great. Serious complications are rare, provided a sufficiently wide medial pedicle is left intact. The patient may sit up in bed on the third day. Every other stitch is removed on the fifth day, and by the eighth day all have been removed.

Bulletin of Neurol. Inst. of New York, New York

5: 1-544 (Aug.) 1936. Partial Index

Cerebrospinal Fluid in Vascular Diseases of Central Nervous System. E. D. Brewer and C. C. Hare, New York.—p. 5.

Sensory and Other Aspects of Multiple Sclerosis. R. M. Brickner, New York.—p. 16.

Neoplastic Cysts Communicating with Lateral Ventricles. I. Cohen, New York.—p. 21.

*Some Neurologic Syndromes Produced by Arsenic and Lead. L. H. Cornwall, New York.—p. 28.

Clinical Diagnosis of Tumors of Corpus Callosum. F. Cramer, New York.—p. 37.

Pathognomonic Encephalographic Sign of Subdural Hematoma. C. G. Dyke, New York.—p. 135.

Significance of Incomplete Homonymous Hemianopia in Brain Tumor: Study of Forty-Nine Verified Cases. T. H. Johnson, New York.—p. 202.

Differential Diagnosis of Parasagittal Gliomas and Parasagittal Meningiomas. C. B. Masson, New York.—p. 218.

Syndrome of Unruptured Aneurysm of Intracranial Portion of Internal Carotid Artery. J. M. McKinney, Teresa Acree and S. E. Soltz, New York.—p. 247.

Heredity in Diseases of Nervous System. B. Sachs, New York.—p. 340.

Migraine: Critique of Hypophyseal Theory. W. Timme, New York. —p. 437.

Angioblastic Meningiomas: Supratentorial Hemangioblastomas. A. Wolf and D. Cowen Jr., New York.—p. 485.

*Progressive Muscular Dystrophy: Group of Five Cases Presenting Some Peculiar Deformities. E. G. Zabriskie, C. C. Hare and M. M. Harris, New York.—p. 526.

Neurologic Syndromes Produced by Arsenic and Lead.—In order to illustrate the relation of arsenic and lead to neurologic disease, Cornwall describes clinical observations on six cases. One patient developed locomotor difficulties following consumption of bootleg whisky. Another patient developed ataxia and weakness in all extremities. A third patient developed severe headaches as a result of ingesting wine that was found to contain large amounts of arsenic. The wife of this patient, who had consumed wine from the same source, developed locomotor difficulty, mental confusion and slurring speech. A fifth case represents a myeloradiculitis due to intoxication by arsenic or lead or both, derived from home brewed beer. The last case described is another example of headache as the most prominent symptom. Individual tolerance to the metals is subject to wide variation. Pathologic damage usually results from the retention of the metals in the tissues. Their presence in the blood indicates that they have been released from the

tissues and are in a mobile state. The urinary content indicates merely the amount that is being eliminated at the particular time the specimen is collected. Absence of metals from the urine may mean nothing, unless the patient is receiving eliminative therapy at the time the specimen is collected. The quantities in both the blood and the urine may be high at a time when the clinical symptoms are regressing or even after they have been completely relieved. Except in dermatologic conditions, it is speculative as to how much significance, if any, can be attached to the quantities found in the hair or the skin. Both tissues may be functioning merely as storage reservoirs where the metals reside in an inert state. When clinical symptoms are present, which may be attributable to metallic retention, mobilization and excretion are usually followed by clinical improvement. The author believes that this is always true in the case of arsenic. When the carbon dioxide content of the blood reaches 70 volumes per cent, a refixation of arsenic in the tissues may result and produce an accentuation of symptoms. When this occurs, however, the urinary excretion is diminished. The situation is somewhat different with lead, and too rapid mobilization may accentuate the initial symptoms or produce additional ones, such as gastro-enteritis. In such cases immobilization of the metal is indicated and this may be accomplished by the administration of calcium in the diet, by mouth or intravenously. Diarrhea and colic are the commonest acute symptoms due to lead and they can usually be promptly relieved by the intravenous administration of calcium chloride or calcium gluconate. Tincture of belladonna by mouth is also of value. Whereas elimination of lead is thought to be accomplished best by acidification with ammonium chloride or phosphoric acid, and a low calcium diet, thereby creating a negative calcium balance, similar results may be obtained, though probably less effectively, by the administration of alkalis. Viosterol, parathyroid extract and potassium iodide also induce its elimination. In the cases recited, sodium thiosulfate was effective in promoting the excretion of both arsenic and lead. In order to assure the best result the sodium thiosulfate should be freshly prepared by dissolving 1 Gm. of the crystalline substance in 10 cc. of sterile, freshly distilled water.

Progressive Muscular Dystrophy.—Zabriskie and his associates point out that in a selected group of patients suffering from primary muscular dystrophy, who were studied to determine the effect of aminoacetic acid on the metabolism and its therapeutic value, Harris called attention to the striking deformity of the mandible in two of the members of the group who happened to be brothers. Further investigation revealed other peculiarities in the clinical picture, and it became apparent before long that five patients in the group presented a combination of three distinctive clinical signs which the authors had never encountered together before. The triad referred to consists of (1) contractures appearing early in the course of the illness and involving the larger joints; (2) a pseudohypertrophy of the anterior tibial muscle group with great loss in motor power; (3) a deformity of the mandible which exhibits a very wide angle, a malocclusion of the front teeth and a wide spacing of the lower front teeth. The authors describe the histories of these patients and reproduce photographs showing the deformity of the mandible. They also discuss the metabolic data and the x-ray studies.

Iowa State Medical Society Journal, Des Moines

26: 451-498 (Aug.) 1936

Diseases of Petrous Portion of Temporal Bone from Standpoint of the General Medical Man, the Neurologist and the Otologist. S. J. Kopetzky, New York.—p. 451.
Applied Anatomy of Deep Suppurations of Neck. E. W. Scheldrup, Iowa City.—p. 455.
Systemic Management of Children with Infections of Nose, Throat and Ear. D. H. Kelly, Des Moines.—p. 460.
Stuttering: Research Findings and Their Therapeutic Implications. W. Johnson, Iowa City.—p. 464.
Full Frequency Audiometer. J. E. Reeder, Sioux City.—p. 469.
Methods of Diagnosis and Treatment in Allergic Disease. Julia Cole, Iowa City.—p. 469.
Allergic Manifestations in General Practice. E. G. Senty, Davenport.—p. 472.
Tumors of Scapula: Osteoma with Report of Case. J. A. W. Johnson, Newton.—p. 476.
Acute Hemorrhagic Pancreatitis. F. P. McNamara, Dubuque.—p. 478.

Journal of Lab. and Clinical Medicine, St. Louis

21: 1105-1216 (Aug.) 1936

Reliability of Fermentation Tests in Identification of Monilias. E. W. Hopkins and H. C. Hesseltine, Chicago.—p. 1105.
Cultural and Morphologic Studies of Cryptococci and Monilias Isolated from Vulvovaginitis and Oral Thrush. E. W. Hopkins and H. C. Hesseltine, Chicago.—p. 1113.
Further Studies on Copper and Iron in Metabolism. H. L. Keil and V. E. Nelson, Ames, Iowa.—p. 1119.
Value of Biopsy. J. M. Neely, Lincoln, Neb.—p. 1124.
Does Calcium Neutralize Thyroxine? C. A. Hellwig, Wichita, Kan.—p. 1131.
Administration of Epinephrine by Inhalation. J. B. Graeser and A. H. Rowe, Oakland, Calif.—p. 1134.
Production of Basophilia of Granules of Polymorphonuclear Neutrophilic Leukocytes in Experimental Infection of Rat. M. Francis Xavier O'Reilly, Ann Arbor, Mich.—p. 1137.
Blood Sugar Level After Prolonged Carbohydrate Feeding. M. Caroline Hrubetz, New York.—p. 1142.
Relation of Nonfilament and Filament Counts During Excitement. H. L. Katz and L. B. Nice, Columbus, Ohio.—p. 1145.
*Simple Treatment for Psoriasis. J. Krafka Jr., Augusta, Ga.—p. 1147.
Sources of Error in Laboratory Diagnosis of Amebiasis. W. DeYoung, Chicago.—p. 1149.
Aminopyrine and Circulating Leukocytes: Effect of Prolonged Administration on Number and Type of White Blood Cells. S. D. Simon, Cincinnati, and M. H. Metz, Dallas, Texas.—p. 1154.
Fatal Case of Tularemic Pneumonia with Associated Ileitis: Clinical and Pathologic Report. G. H. Fetterman and H. Lerner, Mayview, Pa.—p. 1157.
Cause and Significance of Electronegativity of Active Living Tissue. W. E. Burge, O. S. Orth, H. W. Neild, R. Krouse and G. C. Wickwire, Urbana, Ill.—p. 1162.
Some Observations on Gastric Anacidity in Relation to Gastroduodenal and Colonic Floras and an Associated Anemia. J. C. Torrey and M. Lake, New York.—p. 1170.
The Age of Sexual Maturity in 250 Albino Female Rats (Mus Norvegicus-Albicus, Wistar Strain). R. H. Rigdon, Durham, N. C.—p. 1182.
Study of Nonspecific Reactions of Cerebrospinal Fluids with Bordet and Ruelens Antigen in Complement Fixation Test for Syphilis. E. L. Hazen and A. Greenspan, New York.—p. 1185.
Ide Test: New Color Test for Syphilis. S. Ide and T. Ide, Tokyo, Japan.—p. 1190.
Convenient Food Cup for Rats. W. D. Gallup, Stillwater, Okla.—p. 1194.
Interference of Nitrites in Detection and Estimation of Urobilinogen in Urine. E. H. Bensley, Montreal.—p. 1195.
Microdetermination of Sodium by Uranyl Zinc Acetate Method and Titration of Uranium with Cadmium as Reductant. G. Chen, Peiping, China.—p. 1198.
Modification of Wright's Technic for Determination of Opsonic Index. W. H. Crane and J. L. Brakefield, Birmingham, Ala.—p. 1203.
Control of Mange in Laboratory Dogs. F. W. Kinard and J. van de Erve, Charleston, S. C.—p. 1203.
*New Microreaction for Serodiagnosis of Syphilis: Adaptation of Kahn Standard Antigen. A. R. Casilli, Elizabeth, N. J.—p. 1204.
Staining Technic for Blood in Spinal Fluid: Method to Differentiate Between Recent and Old Hemorrhage. J. Q. Griffith Jr., Ella Roberts and W. A. Jeffers, Philadelphia.—p. 1208.

Simple Treatment for Psoriasis.—Krafka observed that in the South psoriasis often clears up to some extent during exposure to the summer sun. This led him to the hypothesis that it might be cured with viosterol. A trial test was made of the hypothesis. A patient with a case of ten years' standing, continuous duration, was put on a routine treatment of viosterol: two gelatin capsules containing 3 minims (0.2 cc.) each of halibut liver oil with viosterol, daily. Within sixty days from the beginning of the test, the skin of this patient was entirely clear. The author describes two other cases of psoriasis in which he obtained favorable results with viosterol medication. He admits that observations in only three cases do not permit definite evaluation. He says that if the treatment were at all hazardous or difficult he would not presume to lay it before the profession, but that in view of the simplicity of the method he thinks it should be put to a trial.

New Microreaction for Serodiagnosis of Syphilis.—Casilli presents a simple adaptation of the Kahn antigen for slide agglutination. The antigen is prepared and titrated exactly according to the instructions given by Kahn. After the antigen salt mixture precipitate has been standing for half an hour, although ten minutes will be sufficient, the mixture is centrifugated at high speed for approximately ten minutes. This last step constitutes the first modification. The clear, supernatant, alcoholic salt solution is carefully decanted off. A clean piece of soft white cloth is inserted into the tube, down to but not touching the mush at the bottom, so as to absorb as much as possible of the alcoholic salt solution

remaining. This mush is a yellowish white, iodized oil, cholesterinized mixture, and it is this substance which is used in the test. This separation of the antigen mush from the alcoholic salt solution constitutes the second and really significant modification. Now there is placed on three clean slides, previously labeled known positive, known negative and unknown, 0.1 cc. of the inactivated serum corresponding to the label. A smaller amount of inactivated serum can be used with equally good results. One loopful of antigen mush is then added to each of the serums and with the same loop emulsified until no visible particles remain. A thin platinum wire loop 0.5 mm. in diameter is used and is sterilized in the flame and allowed to cool before each loopful is taken. This procedure may be continued for as many unknown serums as desired, but the author feels that five unknown serums is the maximum number advisable. Clumping almost immediately follows emulsification in the positive serums; the negative ones remain milky and homogeneous. For weaker positive serums a minute may elapse before clumping is observed. The results are read with the naked eye and are best observed with reflected light from below. The observation should not exceed five minutes and clumping is facilitated by occasional gentle tilting of the slide back and forth. Reading should be made as strongly positive, weakly positive and negative, although with added experience more quantitative readings are not, as a rule, difficult.

Journal of Pediatrics, St. Louis

9: 149-278 (Aug.) 1936

Treatment of Nineteen Cases of Typhoid Fever in Children: Report on Importance of Nonspecific Immunotransfusion Therapy. K. Habel and W. J. Crocker, Philadelphia.—p. 149.
Dysentery Bacillemia. P. E. Rothman, Los Angeles.—p. 167.
Scleroderma: Report of Case with Sclerodactylia and Hemiatrophy. R. H. McCrackin, Edea, Cameroun, West Africa.—p. 173.
Technics for Measuring Infants. Helen L. Dawson, Iowa City.—p. 187.
Tuberous Sclerosis: Encephalographic Interpretation. R. N. DeJong, Ann Arbor, Mich.—p. 203.
Pediatric Diagnosis. W. C. Davison, Durham, N. C.—p. 209.
Omphalitis in the New-Born. J. W. Chamberlain, Boston.—p. 215.
*Influence of Breast and Artificial Feeding on Infantile Eczema. C. G. Grulee and H. N. Sanford, Chicago.—p. 223.
*Capillary Resistance Test and Its Relation to Vitamins C and D. C. B. Weld, Toronto.—p. 226.
Rheumatic Involvement of Appendix. A. T. Martin and S. L. Ellenberg, New York.—p. 234.
Treatment of Gonorrheal Vaginitis in Childhood with Estrogenic Substances. Margaret A. Limper and Ethel E. Hieronymus, Louisville, Ky.—p. 240.

Influence of Breast and Artificial Feeding on Infantile Eczema.—Grulee and Sanford point out that, although infantile eczema has received much attention in recent years, the effect of diet on these infants, once so stressed, has been largely lost sight of recently. For this reason the authors studied 20,061 babies. An infant was considered suffering from infantile eczema if there were any lesions on the face or body at the time of examination. This does not include "cradle cap." None of these infants received any treatment except the discontinuance of soap and water to the skin and the use of olive oil only for cleansing purposes. None of the feedings were changed in any way. In the artificially fed infants, 1½ ounces of boiled cow's milk and one-tenth ounce of cane sugar per pound of body weight were used. In all infants cod liver oil, orange juice, cereals and vegetables were added to the diet. The authors found that the general incidence of infantile eczema is lowest in the breast-fed infants. In the partially breast-fed it is twice as frequent as in the breast-fed infants, and in the artificially fed infants seven times as great. In the monthly incidence both those infants entirely breast fed and those partially breast fed show an increase to the sixth month and then a rapid decrease through the ninth month. The artificially fed infants continue to show an increase until the eighth month and only a slight decline in the ninth month. In the seasonal incidence all groups are increased in the winter and spring and decreased in the summer and autumn.

Capillary Resistance Test and Its Relation to Vitamins C and D.—Weld says that among the various manifestations of scurvy the hemorrhagic tendency has been suggested as that most useful for detecting latent or subclinical cases. The hemorrhages are due to an increased permeability of capillaries, and several workers have suggested the use of the capillary resistance test to diagnose latent scurvy. The author mentions a number of these tests and he hoped that some such method might be useful in detecting early or mild cases of vitamin C deficiency and hence be of service in determining the optimal vitamin C content of the diet. He first applied Dalldorf's technic, in which the lowest degree of suction necessary to produce any petechiae, in a cup 1 cm. in diameter applied to the skin of the outer aspect of the upper arm for one minute, determines the threshold, to a group of normal individuals. This consisted of members of the laboratory staff and convalescent patients in the hospital. The ages of the children ranged from 4 to 14 years, the infants being under 2 years of age. All were receiving adequate amounts of vitamin C in the diet. In the cases of the infants the skin of the abdomen was used instead of that of the upper arm, though in several instances the arms were tested as well, with similar results. The author obtained a great variation in responses. He observed that young children tend to have a higher resistance than older children or adults. No improvement in the capillary resistance following administration of tomato juice was observed in a group of eighty adults. These were in an institution, their diet was well controlled and it was one low in vitamin C. Several children suffering from scurvy or known to have had no source of vitamin C for weeks were found to have normal resistances. In ten of eleven subjects viosterol in moderate doses or irradiation with an ultraviolet lamp promptly raised the capillary resistance. From these observations the author concludes that the capillary resistance determination is not a useful means of determining the state of nutrition with regard to vitamin C. Vitamin D is a more effective agent than vitamin C in increasing the capillary resistances.

Kentucky Medical Journal, Bowling Green

34: 321-384 (Aug.) 1936

Sterility in the Male. C. S. Moorman, Louisville.—p. 324.
Sterility in the Female. C. W. Hibbitt, Louisville.—p. 328.
Sterility from the Point of View of the Endocrinologist. W. O. Johnson, Louisville.—p. 331.
Surgical Treatment of Retinal Detachment. A. O. Pfingst and C. D. Townes, Louisville.—p. 338.
Immediate and Secondary Treatment of Eye Injuries. W. Dean, Louisville.—p. 340.
Monocytic Leukemia: Case Report. M. L. Garon, Louisville.—p. 346.
Early Kentucky Medical Literature. E. E. Hume, Washington, D. C.—p. 349.
What the Physician Should Know About Periodontal Diseases. E. D. Rose, Memphis, Tenn.—p. 367.
Urinary Tract Injuries: Diagnosis and Treatment of Injuries of Urinary Tract. S. C. McCoy, Louisville.—p. 374.
Id.: Injuries to Ureters: Report of Case. J. R. Stites, Louisville.—p. 378.
Id.: Injuries to Genito-Urinary Tract: Case Report. J. A. Bowen, Louisville.—p. 380.
Id.: Injury to Kidney. E. S. Frazier, Louisville.—p. 381.
Erysipelas: Report of Case. A. A. Richardson, Williamsburg.—p. 383.

Laryngoscope, St. Louis

46: 569-646 (Aug.) 1936

Otolaryngologic Case Reports: I. Laryngeal Conditions. J. J. Madden, Brooklyn.—p. 569.
Id.: II. Mastoid Conditions. R. J. Gaffney, New York.—p. 574.
Id.: III. Parapharyngeal Infections. E. E. Baker, New York.—p. 578.
Id.: IV. Esophageal Conditions. A. Nigro, New York.—p. 588.
Id.: V. Malignancies of Ear, Nose and Throat. E. M. Pullen and J. M. Lore, New York.—p. 592.
Impacted Dental Plate in Larynx: Removal by Suspension. E. L. Myers, St. Louis.—p. 598.
Thrombophlebitis of Jugular Bulb and Lateral Sinus of Nonotitic Origin: Important Ear Findings: Report of Three Cases. S. Rosen, New York.—p. 602.
Id.: II. Origin and Extension from Throat Infections. J. B. Gehlsen, New York.—p. 604.
Id.: III. Retrograde Extension to Jugular Bulb and Lateral Sinus: Diagnosis and Management. J. L. Maybaum, New York.—p. 610.
Acoustic Tumors Within Internal Auditory Meatus. E. P. Fowler Jr., New York.—p. 616.
*Craniocervical Movement and Muscle Strength. S. M. Weingrow, Bronx, N. Y.—p. 628.
Milk Injection for Pharyngeal and Laryngeal Infections. W. C. Denison, New York.—p. 642.

Craniocervical Movement and Muscle Strength.—Weingrow shows that manipulations of the head and neck in mastoid and cervical involvements, in vestibular tests as well as in the diagnosis and treatment of disorders of the upper respiratory tract, all call for a better understanding not only of the reflex mechanisms but also of movement and muscle strength of the

craniocervical neuromuscular apparatus. Except for the cephalogyric paralysis that occurs as part of the syndromes of Schmidt and Jackson and the occasional references to the nuchal musculature in the elicitation of the tonic neck reflexes, little attention has been paid by the neurologist to the cephalocervical region. The craniocervical movements and muscle strength are particularly affected in lesions that involve the supranuclear motor representations of the lower cranial nerves. When the head of the patient opposes the examiner's hand in the anterior aspect, the patient's chin rotates toward the hemiplegic side and contralateral to the lesion. Head movements that occur in irritative and destructive lesions of the brain should be explained on the basis of the function of the craniocervical system. A case with a Nothnagel syndrome is presented to show the effects of an extrapyramidal lesion on the function of the craniocervical structures. The disturbances in movement and muscle strength of the craniocervical apparatus are furthermore illustrated in multiple vascular lesions of the pons and medulla and compared with the reactions obtained in encephalitic involvements of these regions. Different reactions were obtained in cervical spinal diseases depending on the columns affected. Thus in disease of the anterior horn, associated with a case of syringomyelia, a different response was elicited from that noted in a case of multiple sclerosis. In a case of multiple sclerosis a clockwise and counterclockwise unilateral head clonus, the first one to be presented in the literature, was observed. Lesions of the peripheral cervical nerves produce a much more circumferential and diffuse muscle weakness than that resulting from the localized intracranial unilateral lesions. They also differ distinctly from the effects on selective nuchal muscle groups as encountered in encephalitis. Cases of torticollis, myositis or cervical osteo-arthritis can be differentiated from the craniocervical disturbances of the preceding groups by palpation, local tenderness and other observations.

New York State Journal of Medicine, New York

36: 1135-1192 (Aug. 15) 1936

Recent Advances in Clinical Cystometry by Means of Microcystometer: Studies in Bladder Function III: I. Simons and W. Bisher, New York.—p. 1135.
Late Results in Sixty-Three Cases of Poliomyelitis Treated in Respirator. M. B. Brahdy, Mount Vernon.—p. 1147.
Treatment of Bronchial Asthma by Intratracheal Injections of Iodized Oil. W. Anderson, Pittsburgh.—p. 1151.
Ergot and Ergotamine Tartrate for Puerperal Prophylaxis. J. E. Tritsch, New York.—p. 1160.
Outbreak of Cowpox, Caused by Vaccination Involving Two Families and Two Herds of Cattle. S. W. Sayer, Gouverneur, and F. B. Amos, Albany.—p. 1163.
Between Mental Health and Mental Disease. B. Liber, New York.—p. 1165.

Southern Surgeon, Atlanta, Ga.

5: 255-330 (Aug.) 1936

*Passive Vascular Exercises in Treatment of Obliterative Vascular Disease. O. P. Board, Birmingham, Ala.—p. 255.
Tumors of Trachea. C. Jackson, Philadelphia.—p. 263.
Acute Peritonitis: Some Causes and Treatment. A. Street, Vicksburg, Miss.—p. 277.
Surgery in Treatment of Pulmonary Tuberculosis. C. D. Whelchel, Gainesville, Ga.—p. 285.
Neoplasms of Rectum: Incidence, Interrelationship and Diagnostic Criteria. C. Rosser, Dallas, Texas.—p. 290.
*Therapeusis of Lymphogranuloma Inguinale. E. von Haam, New Orleans.—p. 298.
Perforation of Primary Jejunal Ulcer. D. P. Hall, Louisville, Ky.—p. 309.

Passive Vascular Exercises in Obliterative Vascular Disease.—After presenting a classification of the peripheral vascular diseases, Board gives his attention to the primary organic diseases of the arteries, the primary vasomotor disturbances being disregarded. He points out that the symptoms are due to lessened blood supply to the tissues of the affected extremity. Subjective coldness is often a prominent symptom of organic arterial disease. The objective signs are of greater importance than the patient's symptoms in arriving at a diagnosis. They are absence or decrease in pulse, lowering of surface temperature and color changes in the affected extremities, with ulceration and gangrene in the late stages. As a rule the foregoing signs can be elicited by palpation and inspection. The oscillometer, thermocouple and roentgen rays are helpful. The principal objective in the treatment is the reestablishment of an adequate collateral circulation and the relief of pain. While operations on the sympathetic nervous system have been helpful, when vasospasm predominates they have been disappointing in the obliterative diseases. It is true that often vasospasm plays a part in organic disease, but relieving the spasm does not affect the obliterative changes in the vessel walls. It is not logical to subject a patient to a formidable operation, such as ganglionectomy, to relieve a minor part of the cause of his circulatory failure. The older conservative treatments of improving collateral circulation by physical methods and active exercises have been beneficial, but the improvement has been of short duration. Startling advances in the conservative treatment of obliterative vascular disease have been made since the report of Herrmann and Reid in 1933 on the results obtained by the use of passive vascular exercise. The apparatus consists of a motor driven pump and a glass chamber into which the extremity is placed. The glass boot is fitted snugly about the thigh or arm by a soft rubber cuff and the boot is connected with the pump by means of a rubber tube. The machine runs automatically and is capable of producing any strength of negative and positive environmental pressure at any selected rate of alternation. Usually 80 mm. of mercury negative and 20 mm. of mercury positive pressure have been found the most beneficial, and the rate of alternation is one complete cycle in about fifteen seconds. The treatment varies in frequency and length but on the average is from two to five hours daily. Approximately sixty to 100 hours is necessary to develop an adequate collateral circulation in patients with obliteration of major or secondary arteries. The most striking results have been obtained following the ligation of a large artery or its occlusion by emboli or thrombosis. Pain is usually relieved in a few hours treatment, and in the majority of cases amputation has been avoided. Frozen feet have responded promptly if intensive treatment is instituted before complete obliteration of the arterioles has taken place. In arteriosclerosis with or without diabetes, passive vascular exercise has been an efficient means of overcoming the ischemia of the extremity. Pain is relieved and trophic ulcers usually heal rapidly. Threatened gangrene may be aborted and small areas of dry gangrene may be made to demarcate with minimum loss of tissue. However, the author emphasizes that passive vascular exercise is not a cure-all and that the older conservative methods of treatment that have proved to be of value should not be neglected.

Treatment of Lymphogranuloma Inguinale.—On the basis of the etiology and the pathology of lymphogranuloma inguinale, von Haam analyzes the various methods of treatment. He thinks that surgical removal of the bulk of infected glands, which constitute dangerous foci for the further spread of the disease, can be recommended. The curative effects of partial adenectomy is demonstrated by study of a series of cases so treated. The hopelessness of any type of therapy in the chronic forms of the disease, esthiomene and inflammatory stricture of the rectum, are emphasized and explained on the basis of the character of the pathologic lesions encountered in these conditions.

Tennessee State Medical Assn. Journal, Nashville

29: 295-336 (Aug.) 1936

Diagnosis and Operability of Carcinoma of Stomach. R. L. Sanders, Memphis.—p. 295.
General Paresis: Report of Case. K. S. Howlett and W. F. Roth Jr., Franklin.—p. 303.
Physical Therapy in Chronic Rheumatic Diseases. J. S. Coulter, Chicago.—p. 309.

Wisconsin Medical Journal, Madison

35: 593-684 (Aug.) 1936

Aseptic Necrosis of Head of Femur. F. A. Chandler, Chicago.—p. 609.
Water Balance of Sick Patients. F. A. Coller, Ann Arbor, Mich.—p. 618.
The Otolaryngologist Looks at the Law. W. E. Grove, Milwaukee.—p. 624.
Ambulant Treatment of Hernia. A. H. Knudson, Milwaukee.—p. 627.
Development of Cataract Following Use of Dinitrophenol. R. T. Rank and E. A. Waldeck, Milwaukee.—p. 629.
Pneumococcus Meningitis: Report of Case with Recovery. J. F. Bennett and H. J. Meier, Burlington.—p. 630.
Mucocele of Appendix: Case Report. A. Jackson, Madison.—p. 633.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2: 269-320 (Aug. 8) 1936

Surgery of Pulmonary Tuberculosis: Main Principles. J. Gravesen. —p. 269.
Rational Pneumothorax Treatment. G. T. Hebert.—p. 272.
Diet in Relation to Physical Efficiency. G. E. Friend.—p. 276.
Rationale of Free School Meals. E. H. M. Milligan.—p. 278.
*Paralysis Due to Posture. E. B. Clayton.—p. 280.

Paralysis Due to Posture.—Clayton presents cases of nerve paralysis, which are apparently due to pressure during the maintenance of some posture. He describes cases of paralysis of the anterior tibial, the axillary, the ulnar and the radial nerves. An effort was made to discover to what extent minor cases of pressure paralysis occur that do not last a sufficient time to require treatment. Inquiries from hospital outpatients showed that the foot may "go dead" on crossing the knees and that the hand or occasionally the whole arm may "be dead" on waking in the morning. This "deadness" clears up quickly on movement. In many cases it occurs only occasionally. The author thinks that some of these cases can be explained as perineuritis with added pressure. A few may be due to pressure only. It seems likely that in the others fatigue, cold and damp weather, or a septic focus may have been the predisposing cause.

Lancet, London

2: 237-296 (Aug. 1) 1936

Glycogen and Metabolism of Carbohydrate. F. G. Young.—p. 237.
Obscure Chronic Pain in Right Flank with Reference to Diagnostic Analgesia. C. J. Marshall.—p. 242.
Uveoparotid Tuberculosis. F. Gamm and R. S. Illingworth.—p. 245.
*Changes in Blood Pressure on Descent into Mines, with Especial Reference to Miners' Nystagmus. F. O'Sullivan.—p. 247.
Perforated Peptic Ulcer. H. Bailey.—p. 249.
Oxygen Tent: Note. D. C. Reavell.—p. 250.

Changes in Blood Pressure on Descent into Mines.—It was O'Sullivan's object to discover whether recurrent changes in blood pressure, caused by descent into mines, play any part in the etiology of miners' nystagmus. Twenty-five healthy miners were examined before and after descent, and a rise of systolic pressure was found in all of them (about 20 mm. of mercury in two, 15 mm. in four, 10 mm. in eight, and 5 mm. in eleven). In fourteen there was also a rise in pulse pressure. An hour after the descent the systolic pressure was still raised in five of the men, and slight transient oscillations of the eyeballs could be observed in all of these, especially when they stooped. In four of these five cases of "latent nystagmus" the systolic pressure had risen more than 10 mm. Similar observations were made on twenty-five men suffering from miners' nystagmus, and in this group the rise in systolic pressure after descent was more conspicuous (19 mm. of mercury in one, 15 mm. in eight, and 10 mm. in the other sixteen). An hour afterward as many as fifteen still had raised systolic pressures. All twenty-five showed a rise of pulse pressure on descent. These results suggest that men who have nystagmus are also relatively susceptible to changes in blood pressure on descent. Though by no means conclusive, they accord with the theory that repeated rises in pressure, caused by descent into mines, play a part in the etiology of miners' nystagmus.

Medical Journal of Australia, Sydney

2: 69-102 (July 18) 1936

Some Aspects of Intracranial Surgery, with Especial Reference to Meningiomata. H. R. Dew.—p. 69.
*Some Disturbances of Circulatory System Due to Pneumonia and Other Toxic Conditions. E. F. Gartrell.—p. 76.
Sequels of Cerebral Injuries Due to External Trauma. T. Hamilton. —p. 81.
Human Psittacosis in Australia. F. M. Burnet and J. Macnamara. —p. 84.

Disturbances of Circulatory System Due to Pneumonia.—Gartrell discusses the toxic effects on the circulatory system of such diseases as pneumonia, influenza, typhoid and typhus fevers, and hyperthyroidism. The prime factor is the toxin, which may poison both the heart itself and the peripheral vascular field, the latter effect being probably the more important. Even in the absence of myocardial damage, serious injury may be inflicted on the capillaries and arterioles. The mechanical factors in the causation of failure of the heart include capillary stasis in the diseased lung tissue, interference with respiration, fever, cough and emotional disturbance. Important as these factors may be, the normal heart has sufficient reserve to cope with the extra strain; but if the myocardium is damaged by the toxin or hampered by preexistent cardiovascular disease, the mechanical factor may be the last straw precipitating cardiac failure. Peripheral failure is a condition akin to shock in which the walls of the small peripheral vessels are so damaged by the toxin that they lose their tone and dilate, with the result that the venous return to the heart becomes inadequate for the maintenance of the circulation. In the majority of patients the damage is not so severe. If venous congestion occurs or if the right side of the heart dilates, venesection to the extent of not less than 12 ounces (350 cc.) is indicated. If there is much anoxemia, oxygen should be given continuously, day and night, at the rate of 2 liters per minute, for in some cases anoxemia is a factor in precipitating cardiac failure. The routine administration of digitalis is advocated by some and deprecated by others. The physician must remember that peripheral failure is more common than myocardial failure. Therefore it is in only a limited number of cases that there is any scope for its beneficial action. In the remainder it is tantamount to adding yet another poison to a system already beset by toxins. Rest, obtained by adequate doses of morphine if necessary, is an essential part of treatment. In pneumonia, even apart from peripheral failure, the skin capillaries contain a great deal of blood. It is easy to see why hydrotherapy meets with some measure of success in cases of peripheral failure, because it reduces the temperature and at the same time constricts the terminal vessels, so helping the peripheral circulation. Camphor appears to withdraw blood from the skin, but its tendency to dilate the heart does not enhance its popularity. Alcohol is distinctly contraindicated. Epinephrine is of great value, for it not only causes constriction of the small arterioles but also increases the force of the heart's contraction and dilates the coronary vessels. However, when the toxic damage to the walls is sufficiently severe, even epinephrine fails. Solution of posterior pituitary may be given in addition to epinephrine in doses of 1 cc. subcutaneously every twelve hours, because its action is more prolonged. Unfortunately it tends to dilate the heart and to constrict the coronary vessels. Therefore it must be ascertained that the myocardium is practically unimpaired before throwing on it the extra strain. Strychnine is of value chiefly during convalescence.

Japanese Journal of Gastroenterology, Kyoto

8: 59-120 (June) 1936

Experimental Studies in Metabolism of *o*-Mono-Iodine-Benzoic Acid. S. Sasaki.—p. 59.
Experimental Studies on Influence of Seasons on Pigment Excreting Function of Liver. R. Kawakatsu.—p. 80.
Influence of Aliphatic Alcohols on Pigment Excreting Function of Liver and Kidneys: I. Effect of Ethyl Alcohol. Y. Iida.—p. 93.
Contributions to Knowledge of Genesis of Gallstones: Experimental Study in Rabbits in Cases of Administration of Excess of Irradiated Ergosterol. S. Hamanaka.—p. 103.

Japanese Journal of Obstetrics & Gynecology, Kyoto

19: 77-174 (March) 1936

Appearance of Reticulated Cells in the New-Born; In Addition on Relationship to Icterus Neonatorum. H. Fujimori and M. Noguchi. —p. 78.
Experimental Results with Hakulan: Preparation Made on Basis of Foam Treatment for Flow. H. Fujimori and M. Natsume.—p. 83.
Female Sexual Hormones and Malignant Tumors. Y. Nitta.—p. 90.
Separation of Retina Complicating Kidney of Pregnancy: Case. M. Ozaki, M. Oshima and T. W. Yun.—p. 110.
Spina Bifida Diagnosed During Pregnancy: Case. A. Yamabe and T. W. Yun.—p. 119.
Pregnancy in Rudimentary Horn of Uterus: Case. T. W. Yun.—p. 124.
Development of Cancers, in Corpus Uteri, Cervix Uteri and Stomach, and an Ovarian Cyst with Intervals of Few Years: Case. T. W. Yun.—p. 130.
Histologic Study of Peripheral Nerve in Human Female Genitals: Parts V, VI, VII and VIII. M. Ozaki.—p. 137.

Paris Médical

2: 105-116 (Aug. 15) 1936. Partial Index

Hemiplegia with Concomitant Unilateral Amaurosis in Cardiac Patient. C.-I. Urechia and L. Dragomir.—p. 105.
Artificial Respiration: Silvester Method. C.-J. Mijnlieff.—p. 106.
*New Treatment of Diphtheritic Paralyses. P. Dodel and A. Foucher.—p. 110.
Clinical Value of Counting Tubercle Bacilli in Sputum. G. Olivier.—p. 114.

Treatment of Diphtheritic Paralyses.—Consideration of the mechanism of diphtheritic paralyses led Dodel and Foucher to ask whether the neurotoxic toxin fixed by the cellular lipoids could not be displaced by another neurotoxin with strong affinity for the nervous lipoids. For these theoretical reasons they investigated the possibility of displacing the combination of the diphtheritic toxin with the nervous system lipoids by means of chloroform, administered orally. This therapy they attempted by administering from 30 to 60 cc. of saturated chloroform water diluted in syrup. The method was applied in eleven cases of diphtheritic paralysis. The results were good and, though spontaneous recovery may occur following such paralysis, the authors point out that in five of their cases the paralyses were of serious nature. Two of their patients died of pulmonary complications existing at the time the treatment was instituted. In one case, however, the preventive administration of chloroform water did not prevent the appearance of paralysis. Although the therapeutic value of the procedure is still somewhat uncertain, the authors believe that they have proved that the ingestion of chloroform water is without danger.

Presse Médicale, Paris

44: 1289-1304 (Aug. 12) 1936

Functioning of Kidney in Cardiac Patients. L. Langeron, M. Paget and G. Fruchart.—p. 1289.
*Treatment of Ozena by Acetylcholine. Z. Chéridjian and T. Sciclounoff.—p. 1290.

Treatment of Ozena by Acetylcholine.—Chéridjian and Sciclounoff review various theories on the cause of ozena. The theory that they support is the so-called endocrine-sympathetic and sympathetic-parasympathetic theory. Many investigators have attempted to develop a rational therapy based on this theory of causation, but few have attempted treatment with acetylcholine. The vasodilating action of this choline derivative is more intense at the skin level, weaker at the splanchnic and kidney level, and absent at the level of the lungs. In the cases reported by these observers, the acetylcholine was absolutely pure. It was given usually by hypodermic injections and rarely intravenously. The injections were absolutely painless and the single physiologic effect observed was that of dilatation of the retinal artery. Of the three men treated by this means, one recovered, one improved and one failed to improve. Of the six women treated, four recovered and two improved. The authors conclude that this is a promising method of treatment and they suggest that the failures may be due to a hypocalcemia and that the artificial production of hypercalcemia in these patients might facilitate or reinforce the action of the acetylcholine.

Revue Méd.-Chir. des Maladies du Foie, Paris

11: 257-336 (July-Aug.) 1936

*Variations in Relations of Cholesterol Esters to Total Cholesterol in Hepatic Disease. G. Laroche and A. Grigaut.—p. 257.
Serum Lactogelification in Hepatic Disorders. W. Kopaczewski.—p. 270.
Hepatobiliary Semeiology of Insomnia. G. Parturier.—p. 287.
Hepatobiliary Semeiology of Drowsiness. G. Parturier.—p. 302.
Hepatobiliary Semeiology of Pruritus. G. Parturier.—p. 313.

Cholesterol Esters and Total Cholesterol in Liver Disease.—In comparing the relations of cholesterol esters to total cholesterol, Laroche and Grigaut use the method previously described by Grigaut in determining the quantity of cholesterol esters. The colorimetric method of Liebermann was used for determining the total cholesterol in the blood serum. Investigation of these ratios in patients with various diseases convinced the authors that the diminution in the amount of cholesterol esters and the lowering of the cholesterol ester-total cholesterol ratio is an index of hepatic insufficiency. In the cirrhoses the quotient is normal, but it is well known that biologic tests usually fail to identify parenchymatous lesions. The cases in which the quotient was especially lower were those of subjects affected with secondary hepatic jaundice or severe terminal icterus. The change in the quotient in xanthomatous subjects previously treated by irradiation of the liver furnished a powerful argument in favor of the hepatic site of esterification. Finally, experimentally in the dog, phosphorus intoxication appears to produce a moderate lowering of the quotient. These clinical, therapeutic and experimental facts agree and demonstrate the hepatic site of the formation of cholesterol esters.

Helvetica Medica Acta, Basel

3: 331-504 (Aug.) 1936. Partial Index

*Secretory Disturbances of Kidney in Hypertrophy of Prostate and Their Significance in Determining Operability. M. Saegesser.—p. 331.
Remarks on Mode of Development, Prognosis and Treatment of Generalized Peritonitis and Grave Appendicitis. G. Piotet.—p. 361.
Traumatic Fracture of Symphysis of Pubic Bone. R. Meyer-Wildisen.—p. 370.
*Gynecologic and Obstetric Significance of Essential Thrombopenic Purpura. H. Guggisberg.—p. 375.
Technic of Carbon Dioxide Baths. K. von Neergaard.—p. 402.
So-Called Lymphatic Reaction and Contribution to Glandular Fever. A. Studer.—p. 418.

Kidney Disturbances in Hypertrophy of Prostate.—Saegesser shows that the determination of operability is especially difficult in cases which stand at the threshold of operability. He discusses the test methods that have been recommended: the determination of the urea content of the blood, the dilution and concentration tests, the quantity of urine that is excreted in twenty-four hours, cryoscopy, refractometry and determination of the alkali reserve and of the sodium and the chloride content of the serum. Following a discussion of the pathologic-anatomic aspects and of the functional disturbances of the kidney of patients with hypertrophy of the prostate, the author gives a summarizing evaluation of the various methods of examination. He says that the urea values of the blood are found to be normal in a large percentage of cases with disordered renal function. An operation should never be done merely on the basis of a normal urea content. He states that a favorable outcome of the dilution and concentration test makes it probable that the patient will survive the operation, but the ultimate prognosis is not necessarily favorable. The determination of the quantity of urine excreted in twenty-four hours is of value only if considered together with the results of other examinations. The refractometric examination of the blood serum frequently discloses normal values. The determination of the alkali reserve of the blood revealed no parallelism with the other functional tests and the author thinks that this test has no particular value for the prognosis. The sodium content of the blood showed in many cases a relative reduction and the chloride content a relative or absolute increase. Although these changes are to a certain extent characteristic for hypertrophy of the prostate, more observations are required in order to determine whether they are helpful in the estimation of operability.

Gynecologic Significance of Essential Thrombopenic Purpura.—After discussing the symptomatology of essential thrombopenic purpura, Guggisberg gives his attention to the behavior of the genital organs in thrombopenia, pointing out that hemorrhage of the mucous membranes is one of the main symptoms of thrombopenia. The mucous membranes chiefly affected by the hemorrhage of thrombopenia are those of the nose and of the genitalia. The menstrual flow is usually increased in thrombopenia and it is frequently combined with severe nasal hemorrhage. The author discusses the relations between thrombopenia and the process of propagation; that is, the significance of thrombopenia in pregnancy, delivery and the puerperium. Some observations indicate that in certain cases pregnancy may be an etiologic factor in the development of thrombopenia. However, no definite proof has yet been furnished as to whether there really is a pregnancy thrombopenia. In discussing the influence of pregnancy in an existing thrombopenia, the author says that it may be exacerbated or improved. Birth and the afterbirth period may be entirely normal in thrombopenia. However, there are also cases in which the hemorrhages after birth may threaten the life of the woman. During the puerperium, disturbances are frequent, even when the afterbirth period has been normal. The treatment of thrombopenia should be chiefly a general one, particularly during pregnancy. Especial attention should be given to the prevention of anemia.

Annali dell'Ospedale Psichiatrico di Perugia

30: 1-60 (Jan.-March) 1936

Abnormal Instincts: Normal and Pathologic Personality. F. Del Greco.—p. 1.
*Alterations of Neuroglia in Cerebral Astrocytoma: Histologic Study of Brain; Case. G. Agostini.—p. 19.
Differential Glycemia in Arterial and Venous Capillaries in Manic-Depressive Psychosis with Abolished Psychomotor Functions. A. Ansani.—p. 33.

Alterations of Neuroglia in Cerebral Astrocytoma.—Agostini says that the histologic study of the brain in cases of cerebral tumor shows that there is a more or less intense but diffuse gliosis involving the brain even at distant areas from the location of the tumor. The areas around the tumor are involved more intensely by the glial reaction than those at a distance. The gliosis may involve both the white and the gray matter. It is probable that several pathogenic factors, such as predisposition of the individual, local conditions like cerebral compression by the tumor and irritation, and the action of toxic substances originating both from the tumor and from products of local cellular destruction, are involved in the development of the glial reaction. The author's statement is based on the review of the literature and on the histologic study of the brain in a case of cerebral astrocytoma located at the pons and medulla oblongata.

Riforma Medica, Naples

52: 1145-1172 (Aug. 22) 1936

Brucellary Spondylitis: Treatment. L. Bargi.—p. 1147.
*Behavior of Obstacle Phenomenon in Thallium Acetate Depilation for Ringworm in Children. A. Nicastro.—p. 1152.

Obstacle Phenomenon in Thallium Acetate Depilation.—Nicastro tested the obstacle phenomenon in the urine of a group of children during the process of depilation by thallium acetate in the treatment of ringworm. The figures showing positive results of the test began increasing from the fourth day of administration of the drug, reached the highest point on the eighteenth day, remained stationary until the twenty-eighth day, and then slowly diminished and became normal within the thirty-fifth and fortieth days. The author states that thallium acetate induces intense functional and anatomic alterations in the body. It has a selective action on organs of ectodermal origin, especially the nervous system. It causes a biochemical disequilibrium with elimination of a great amount of nitrogenous substances through the urine by which the obstacle phenomenon takes place. Falling of the hair is due to inhibition of the hair follicles by the local toxic action and neurotrophic effects of the drug. The highest figures of the curve in the obstacle phenomenon coincide with the days of falling of the hair and with the persistence of alopecia. Regrowing of hair coincides with a diminution of the figures and later on with the disappearance of the obstacle phenomenon in the urine.

Anales de Medicina Interna, Madrid

5: 707-799 (Aug.) 1936

*Mechanism of Death in Addison's Disease (Functional Uremia). C. Jiménez Diaz and M. Arredondo Verdú.—p. 707.
Urochrome: Present Status of Knowledge. E. Ortiz de Landázuri and A. Vergara Olivas.—p. 729.
Hospital Scarlet Fever in Madrid. F. T. Valdivieso.—p. 767.

Cause of Death in Addison's Disease.—Jiménez Diaz and Arredondo Verdú state that death of patients suffering from Addison's disease is caused by true uremia and acidosis. The latter originates in renal insufficiency that is due to disturbances of the energy metabolism of the kidney resulting from the lack of production of adrenal substances. The functional insufficiency inhibits the production of ammonia by the kidney and results in an increased production of acids with consequent disturbances of the ionic and water metabolism, whereupon there is increased elimination of sodium, the sodium-potassium balance of the blood is upset and there occur increased destruction of proteins and increased production of toxic nitrogen bodies (urea and the similar bodies), which cannot be eliminated because of the functional renal insufficiency. As a result acidosis, uremia, potassemia, progressive cachexia and final coma take place. The picture of the mechanism of determination of death in Addison's disease is of importance because it shows the mechanism of production of death in renal insufficiency in diseases other than Addison's and points out the rôle of renal insufficiency of adrenal origin in the development of acidosis and of functional uremia.

Prensa Médica Argentina, Buenos Aires

23: 1991-2044 (Aug. 26) 1936

Pulsating Tumors of Bones: Skeletal Metastases of Hypernephroma; Case. J. Diez and J. Michans.—p. 1991.
Lymphocytic Acute Meningitis of Benign Evolution: Case. D. Boccia and C. Salvo.—p. 2001.
Partial Cystectomy in Cancer of Bladder. F. E. Grimaldi and R. A. Rubi.—p. 2005.
Histophysiology of Teguments of Batrachians. J. Porto.—p. 2009.
*Relation Between Cholesterol and Glutathione in Blood in Pulmonary Tuberculosis. J. Viale and J. B. Ticinese.—p. 2032.

Cholesterol and Glutathione in Blood in Chronic Pulmonary Tuberculosis.—Viale and Ticinese determined the amount of cholesterol and glutathione in the blood of twenty-five patients suffering from chronic pulmonary tuberculosis. They conclude that the amount of glutathione diminishes in direct proportion to the seriousness of the disease and parallels that of cholesterol. The two substances increase or diminish in equal quantities. Glutathionemia, in chronic pulmonary tuberculosis, is an index of the same prognostic value as cholesterolemia. The establishment of an index of the glutathione and cholesterol in the blood, which has been advised by Bethoux for evaluating the potential evolution of the disease and the resistance of the patients, is unnecessary and of no practical value. The determination of the amount of glutathione in the blood is an index of sufficient prognostic value.

Revista Españ. de Enferm. del Ap. Digest., Madrid

2: 563-640 (Aug.) 1936

Diaphragmatic Hernia and Pseudohernia. F. G. Lorenzana and J. M. Baamonde.—p. 563.
*Colitis and Tuberculous Bacillemia. J. Villardell.—p. 571.

Colitis and Tuberculous Bacillemia.—Villardell found positive tuberculous bacillemia in four patients out of a group of seventy-five who were suffering from cryptogenic colitis. The clinical picture of the patients suffering from tuberculous bacillemia can be included in the types of diarrheic colitis and colitis associated with constipation. Patients of the first type give a history of intestinal dyspeptic and nutritional disturbances from childhood. Those of the second type suffer from slight nutritional disturbances and persistent febricula. The roentgen examination of the colon in both forms of colitis shows segmental and total hypermotility of the organ but no signs of organic lesions. The author believes that cryptogenic colitis is a form of latent tuberculosis characterized by the clinical development of colic reactions. Diet is of primary importance in modifying the bacterial flora and the motor intestinal reactions. The author obtained satisfactory results from heliotherapy and small doses of sanocrysin (a double thiosulfate of sodium and gold). The general condition of the patients improved and in some cases the tubercle bacilli disappeared from the blood cultures. He calls attention to the importance of further work in this field for possible detection of a tuberculous etiology of cryptogenic colitis and also for early treatment of the disease.

Revista Médica del Rosario, Rosario de Santa Fe

26: 495-606 (June) 1936

*Erythrosedimentation in Surgical Tuberculosis. I. Slullitel.—p. 495.
Argentinian and Foreign Laws on Ocular Accidents from Work. V. Ortiz.—p. 512.
Life of Gastrectomized Patients. J. Oviedo Bustos.—p. 540.
Hydatid Cyst of Orbit: Case. I. Racedo Aragon and A. C. Molina.—p. 567.
Spontaneous Pneumothorax in Course of Acute Bronchopenumonic Disease in Adult: Case. J. Martinez and H. A. Kruse.—p. 574.
Antileprosy Crusade in São Paulo. A. Nudemberg.—p. 591.

Erythrosedimentation in Surgical Tuberculosis.—Slullitel determined the sedimentation rate of the erythrocytes in thirty patients suffering from surgical tuberculosis in different locations. He concludes that the test is not specific and has a relative diagnostic value. The erythrosedimentation is slightly accelerated in the early evolution of the disease. In patients

in the incipient stage and in those suffering from tuberculosis in evolution, the erythrosedimentation increases after a subcutaneous injection of a small amount of a 1:10,000 tuberculin solution. It does not accelerate, however, when injected in patients clinically cured or in those suffering from osteochondritis. Low sedimentation speed indicates the existence of inactive lesions or of active lesions on the way to recovery. The curve of the sedimentation speed with maintained figures showing no tendency to decrease indicates the existence of lesions in evolution which do not improve by the treatment. In cases of this nature the prognosis is serious and a change of climate is indicated. The presence of an ascending curve of the erythrosedimentation generally indicates the development of an abscess.

Medizinische Klinik, Berlin

32: 921-952 (July 10) 1936. Partial Index

Skin and Roentgen Rays. H. T. Schreus.—p. 921.
Aspects of Cushing's Disease. W. Berblinger.—p. 923.
*Pharmacologic Action of Bee Venom. E. Starkenstein and H. Weden. —p. 927.
Simmond's Disease. C. Kaufmann.—p. 932.
Evaluation of Premortal Xanthoproteic Reaction According to Becher and Its Relations to Premortal Anemia in Patients with Serious Disorders and in Senility. A. H. Müller.—p. 934.
Observations on One Hundred and Thirty-Five Cases of Thorax Empyema in Children. Anna Schmidt.—p. 937.

Pharmacologic Action of Bee Venom.—Starkenstein and Weden cite the results of other investigators who found that the action of bee venom following its intravenous injection is similar to that of the saponins or the sapotoxins. A number of investigators, including the authors, have determined that the action of saponin is largely due to disturbances in the distribution of cholesterol, which in turn change the permeability of the cellular walls of different organs and cause changes in the distribution of exogenic and endogenic substances. It has been proved that the action of many narcotics is modified by disturbances in the cholesterol economy of the organism. For instance, following the parenteral administration of cholesterol suspensions the action of many narcotics can be intensified. The reciprocal action of saponin and cholesterol is demonstrated most strikingly in case of their simultaneous administration. The possibility of determining saponin action indirectly by its influence on narcosis provides a method for the detection of the saponin-like character of other substances. In view of the similarity of the actions of saponin and bee venom, the authors decided to investigate whether bee venom has the same effect on narcosis as has saponin. Their experiments demonstrate clearly that, in this respect too, bee venom behaves like saponin. However, it has not been definitely determined as yet to what extent this action of bee venom is dependent on disturbances in the distribution of cholesterol.

Monatsschrift für Kinderheilkunde, Berlin

66: 107-250 (July 13) 1936. Partial Index

Pulmonary Tuberculosis During Childhood. A. Panoff.—p. 107.
New Investigations on Intra-Uterine Carbohydrate Metabolism. B. Szendi.—p. 128.
*Protein Fractions of Normal and Pathologic Cerebrospinal Fluid During Childhood. P. Ujsághy.—p. 137.
*Measles and Tuberculosis. P. Svastits.—p. 149.
Clinical Aspects of Cerebral Tumors in Children. J. Lutz.—p. 155.
Clinical Aspects of Hepatomegalies with Disturbances in Carbohydrate Metabolism. G. O. Harnapp.—p. 169.

Protein Fractions of Cerebrospinal Fluid During Childhood.—In the cerebrospinal fluids of fifty-eight healthy and 122 children with acute and chronic diseases of the central nervous system, Ujsághy studied the total protein content as well as the fractions of albumin, total globulin, pseudoglobulin, euglobulin and fibrinogen. The total protein content was determined by means of the step photometer, the fractions with the aid of the nephelometer following precipitation with ammonium sulfate. In premature children he observed a considerable increase in the total protein and in the globulin content with comparatively greater increase of the euglobulins and fibrinogen. In these premature children the standard values are reached only about the sixth month, that is, much later than in the maturely born infants, in whom they are reached at about the third month. These normal values are for the total protein between 18 and 26 mg. per hundred cubic centimeters (average 21 mg.), for albumin between 13 and 21 mg. per hundred cubic centimeters (average 17 mg.) and for globulin between 4 and 6.6 mg. per hundred cubic centimeters (average 5.3 mg.). The albumins amount to about three fourths, the globulins to one fourth, of the total proteins. Euglobulins and fibrinogen are absent from the normal cerebrospinal fluid after the sixth month. The globulin-albumin quotient remains always below 0.5. In children with diseases of the nervous system, the author found that in suppurating meningitides there was a greater and in tuberculous meningitides a milder increase in the protein values, at first with a relative and absolute increase in the albumins, later with a relative increase in globulins. The fibrinogen appears in almost every case in measurable quantities, but as a rule in large ones. In encephalitides, the author found that in sporadic and in morbillous encephalitis the total protein content may reach higher values, and occasionally there are also greater euglobulin and fibrinogen values. In influenzal encephalitis the total protein values are often subnormal, occasionally with a relative increase in globulin. In postencephalitic conditions, subnormal values are more frequent and the euglobulin and fibrinogen values may still be increased months after the encephalitis. In children with cerebral tumors the total protein as well as the fractions usually show subnormal values. In epilepsy the values vary within the normal limits; immediately after the attacks the globulins may be relatively increased. In chorea minor the values do not exceed the norm. In syphilitic nurslings the protein values are usually within normal limits, but there may be an increase in euglobulin and fibrinogen. In cases in which meningitis and syphilis concur, the changes that are characteristic for syphilis are displaced by the albumin increase that occurs in meningitis; only the relatively higher euglobulin and fibrinogen values indicate syphilitic origin. In juvenile tabetic dementia paralytica there is an absolute increase in globulin. Hypernormal total protein values as well as increases in euglobulin and fibrinogen occur also in Little's disease. Subnormal values occur in idiocy and imbecility.

Measles and Tuberculosis.—In the course of an epidemic of measles, Svastits studied the action of measles on latent and active tuberculous processes in the lungs by means of clinical, roentgenologic and laboratory methods. Of seventy children who had a positive tuberculin reaction, seven presented symptoms indicating activity. These were mostly young children. Thus it seems that an intercurrent attack of measles is particularly dangerous for young children who have an active tuberculosis. The author emphasizes that during an epidemic of measles all children with a positive tuberculin reaction should be protected, regardless of whether the process is active or not. Protection is especially important in the case of small children. In case of an active process, the protection should be complete (at least from 3 to 6 cc. of measles convalescent serum); in case of inactive tuberculosis and outside of clinics, it is sufficient to mitigate the measles by the administration of from 20 to 30 cc. of serum from adults or of 30 to 50 cc. of blood.

Wiener klinische Wochenschrift, Vienna

49: 1085-1116 (Sept. 4) 1936. Partial Index

Roentgenograms of Results of Accidents and Their Evaluation. W. Altschul.—p. 1085.
Casuistics of Deformity of Ureter in Roentgenogram. T. Canigiani.—p. 1086.
Roentgenologic Diagnosis of Articular Disorders. F. Eisler.—p. 1088.
*Experiences with Irradiations in Dupuytren's Contracture. J. G. Feurstein.—p. 1090.
Atelectasis and Pleurisy. F. Fleischner.—p. 1092.
Influence of Early Roentgenologic Diagnosis on Mortality of Tuberculosis. F. Freund.—p. 1096.
*Exclusive Roentgenotherapy of Mammary Carcinoma. F. Melchart.—p. 1101.

Irradiation in Dupuytren's Contracture.—Following a review of the theories that have been advanced regarding the pathogenesis of Dupuytren's contracture, Feurstein evaluates surgical treatment, conservative measures (hot baths, massage, wearing of splints at night) and injections. When he himself developed a Dupuytren's contracture, he decided to try ray therapy. A review of the literature convinced him that the opinions about the value of roentgen and radium therapy dif-

fered and that the reports about radium therapy were few. Since in earlier years his hands had been rather excessively exposed to x-rays, he decided to resort to radium in his own case. He divided the Y shaped area of hardening in his hand into two fields and applied a radium container with 50 mg. of radium, brass filtration, and a wrapping of gutta-percha and gauze, twice for forty-eight minutes (40 mg. element hours each time). After eighteen days he repeated the treatment with half this dose and after another month he again applied the first dose. Later he repeated the first total dose at longer intervals three times, once distributing the dose to three fields. The result of this treatment was highly satisfactory. The pains subsided after two sessions and the slight contracture also disappeared. The characteristic fibrous pads in the hand became smaller. Later the first signs of Dupuytren's contracture developed also on the other hand. Radium treatment again proved effective. The good results he had obtained on himself induced the author to try radium in eight other cases of Dupuytren's contracture. He reports the histories of three of them and concludes that radium treatment is especially advisable for the early stages, because, if applied at this time, it not only arrests the further progress of the disorder but also counteracts the symptoms, even though it may not effect a complete restitution. However, after the contracture has reached considerable degrees, the patient should be treated surgically.

Roentgenotherapy of Mammary Carcinoma. — In continuing his studies on the simultaneous radium and roentgen therapy of mammary carcinoma and on the basis of results reported by Keynes and Wester, Melchart decided to try exclusive roentgenotherapy in the form of the near irradiation. He worked with an apparatus for surface therapy, with tensions of from 50 to 100 kilovolts, with a focus-skin distance of from 5 to 8 cm., with from 1 to 3 mm. of aluminum filtration and with fields having a diameter of from 6 to 8 cm. The doses varied between 3,500 and 10,000 surface roentgens. With this treatment the primary tumor could always be made to disappear. When metastases developed, they could be counteracted either with this method or by means of contact therapy. However, prophylactic barrier irradiations did not prevent further metastases. The method failed also in the treatment of the metastases of the supraclavicular glands. Moreover, the method involves the danger of necrosis in patients who have been previously irradiated. The author thinks that so far the combination of preliminary irradiation, surgery and after-irradiations must be regarded as the best method for the treatment of mammary carcinoma.

Vestnik Khirurgii, Leningrad

44: 171-342 (No. 122) 1936. Partial Index

Experimental Data Regarding Pathogenesis of Traumatic Shock. P. N. Veselkin, I. S. Lindenbaum, M. E. Depp and Kh. Tagibekov.—p. 176.
Symptomatology and Therapy of Noma. I. M. Sobol.—p. 204.
*Operative Treatment of Diseases of the Biliary Tracts. E. N. Klarfeld. —p. 218.
Surgery of Gallbladder and Biliary Tracts: From the Surgical Division of V. A. Oppel. I. A. Shraer.—p. 234.
*Pylephlebitis as Complication of Appendicitis. A. T. Lidskiy.—p. 240.
Urethral Injuries. A. I. Vasiliev.—p. 251.

Operative Treatment of Diseases of Biliary Tracts.—Klarfeld reports 170 cholecystectomies, twenty-six cholecystectomies combined with choledochotomy, four cholecystogastrostomies, one cholecystojejunostomy and one hepaticoduodenostomy. There were sixteen fatalities in a total of 207 operative cases, a rate of 7.7 per cent. Internal biliary fistulas were observed in six cases, two between the gallbladder and the stomach, one cholecystocolic, one cholecystoduodenal, one between the choledochus and the duodenum, and one between the choledochus and the stomach. The cause of death was peritonitis in four, hemorrhage in three, cardiac failure in three, pneumonia in two, cancer metastases in two, subdiaphragmatic abscess in one and ulcerative esophagitis in one. There was not a single fatality in 105 cases of cholecystectomy in which the peritoneal cavity was closed without drainage. The author states that closure without a drain is followed by a smoother postoperative course, obviates painful dressings, prevents postoperative hernia and shortens the period of hospitalization. It is, however, contraindicated in the presence of obstruction of the common duct, insufficient peritonization of the stump of the cystic duct or of the gallbladder bed, doubtful hemostasis, injury to the biliary tracts or soiling of the wound with gallbladder contents. Hydrops or edema of the gallbladder does not constitute a contraindication to closure without a drain. Operation in the acute stage is more hazardous than in the interval. He advocates early operation. The death rate in neglected cases on patients past the age of 40 amounted to 18 per cent in his series, whereas the early operation had a mortality of 2.2 per cent. The operation of cholecystotomy is seldom indicated. The common duct need not be opened in every case of cholecystectomy. This is indicated only in the presence of a cholangeitis with or without stones.

Pylephlebitis of Appendiceal Origin. — The review of literature suggests, according to Lidskiy, that the incidence of pylephlebitis or mesenteric pyemia, as a complication of appendicitis, is on the decrease. He believes that this is due to the more universal application of the principle of early operation in acute appendicitis. One or more chills, rise in temperature, icteric discoloration of the skin and of the sclerotics, enlargement of the liver and a blood picture characteristic of a severe acute suppurative process suggest the diagnosis. The early diagnosis, however, is difficult and even liver puncture, as proposed by Nössen, Martens and other authors, may in the presence of multiple small liver abscesses give negative results. There exist few indications for ligation of the ileocecal veins at the time of appendectomy. A secondary operation proposed by Wilms and having for its aim ligation of the ileocecal veins in order to arrest the spread of infection into the superior mesenteric vein, the portal vein and the liver has given encouraging results. To be effective it must not be delayed until the development of a characteristic clinical picture. The prognosis in the presence of this complication is grave, the mortality ranging with various authors from 80 to 100 per cent. The best prophylaxis is the early operation of acute appendicitis. This indication becomes even more stringent in the presence of a chill in an acute case of appendicitis.

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*Contribution to Knowledge of Eye Symptoms in Thyrotoxicosis. J. Wahlberg.—p. 579.
*Atypical Leukosis with Multiple, Tumor-like Infiltrate: Case. B. von Bonsdorff.—p. 589.
Testimony of Delivery Record on Etiology of Some Cerebral Disorders. T. Brander.—p. 603.
Ulcus Serpens Corneae in Childhood. S. Stenius.—p. 613.
Peripheral Paralysis of Facialis Following Acute Otitis. H. Björk.—p. 622.
Muscles of Gluteal Region in Primates. N. Riska.—p. 637.

Eye Symptoms in Thyrotoxicosis.—In two of the reported cases of edema of the temples in thyrotoxicosis the condition appeared and disappeared during active thyrotoxicosis together with the classic symptoms of the disorder, and in the third case the edema occurred parallel with exophthalmos in a patient with postoperative myxedema and disappeared on medication with thyroid substance, simultaneously with recession of exophthalmos and myxedema. Wahlberg is inclined to ascribe this edema of the temples, like exophthalmos and edema of the eyelids in thyrotoxicosis, to humoral action of the adenohypophyseal principle by way of the sympathetic nervous system or directly on the local tissues. He says that, since edema of the eyelids and temple is seen only in certain cases and often asymmetrically, there must be variations in sensitiveness to the humoral influence, partly variations in the different cases, partly locally in a given case, and that possibly the characteristic variability otherwise in the picture of thyrotoxicosis may also depend on such variation.

Atypical Leukosis with Multiple, Tumor-like Infiltrate.—Von Bonsdorff says that this case, regarded by him as an acute hematopoietic systemic disease related to chloroma, with rapid febrile course and changes in both the white and the red blood picture and with pronounced fibrosis of the spleen, in a girl aged 15, was dominated by multiple tumor formation, probably built up of myeloid cells, with origin to be sought in an autochthonous heterotopic metaplasia of mesenchymal (reticulo-endothelial) element in the affected organs.